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A Be STAR ATLAS OF FAR UV AND OPTICAL HIGH-RESOLUTION SPECTRA



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European Space Agency

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FAR UV AND OPTICAL

HIGH-RESOLUTION SPECTRA

by

V. Doazan¹, G. Sedmak^{2,4}, M. Barylak³ & L. Rusconi⁴

¹ Observatoire de Paris, France

² Osservatorio Astronomico di Trieste, Italy

³ ESA Villafranca Tracking Station, Madrid, Spain

⁴ Università di Trieste, Dipartimento di Astronomia, Trieste, Italy

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1. Introduction

It is now widely realized that Be stars must be studied in the broadest possible wavelength range, containing at least the far UV and the optical spectral regions. The far UV region, where the resonance lines of highly ionized species (NV, CIV, SiIV) are formed, is essential for the detection and investigation of the superionized atmospheric regions of the mass-outflow from the star. The optical region, where the Balmer emission lines (whose presence in a B III-V type spectrum defines the Be peculiarity) are formed, permits the study of the cool atmospheric regions of the flow, called the envelope. It is now also widely realized that variability is a fundamental characteristic of Be stars and it has become clear that there is no hope of understanding the Be phenomenon unless the variability of Be stars is also understood (see, for example, Doazan, 1982).

The aim of this Atlas is to provide an overview of the spectral characteristics of Be stars in both the far UV and optical wavelength ranges and of their variable behaviour when data are available. Be stars have been frequently observed with the International Ultraviolet Explorer (IUE) (Boggess et al., 1978). The IUE archives contain an enormous amount of information on these objects. After one decade, in 1988, more than 2000 high resolution spectra obtained in the short and long wavelength ranges for about 190 Be stars were stored in the IUE Data Bank. Although a large number of these observations have been published in several publications (see the ESA and NASA Newsletter bibliography), these data were reported for different specific studies. We felt that it was time to collect all these observations and present a selection of them in a condensed form in an Atlas. In order to complete these far UV data we also provide for the majority of these stars line-profiles of H α and /or H β obtained for the long term Be star program of V.D. and collaborators.

The Atlas is organized as follows. In Part I, we illustrate Be star variability in the broadest possible wavelength range, from 1230 Å to 3030 Å. Because Be $\Leftrightarrow$ Be-shell transitions of Be stars in the optical region are spectacular and have important modelling implications, it was our intention to present a complete Be and Be-shell type spectrum in the far UV. The recent phase transition of Pleione (HD23862, 28 Tau) from Be-shell to Be gave us the opportunity to present these two types of spectra *for the same star*. In 1979, Pleione showed a strong shell spectrum which disappeared in 1989 in the optical region. Up to 1990, Pleione was the only Be star observed with the IUE during both Be and Be-shell phases.

In Part II, selected spectral regions containing lines of special interest for Be star modelling (NV, CIV, SiIV, AlIII, FeIII, FeII, and MgII for the far UV and H α and H β for the optical region, i.e. 9 at most when available) are presented for all the Be stars observed with the IUE up to 1988, that is 166 Be stars.

We hope that this Atlas will provide a useful empirical basis for planning observational Be star programs from space and ground, and that it will be used as a tool for future research on these objects.

2. The observational material

2.1 The far UV IUE spectra

The far UV material for Part I of the Atlas was provided by the authors' observations of Pleione (36 IUE spectra) and additional spectra (2) dearchived from the Data Bank of the IUE Observatory at VILSPA, Madrid. From all these spectra, four were selected to illustrate the Be and Be-shell phases of Pleione.

The far UV observational basis for Part II of the Atlas was provided by the Data Bank of VILSPA, Madrid. The interrogation of the Data Bank for all high resolution spectra (0.2 Å resolution) of all Be and shell spectra observed with the IUE was made by M.B. in November 1987. A total of 2080 spectra obtained for 189 Be/shell stars were recorded, in the short wavelength range (1200-1900 Å) (SWP) and in the long wavelength range (2000-3000 Å) (LWR/LWP). The distribution of these spectra reflects the two types of Be star studies which have been carried out with the IUE: variability studies and statistical surveys. About 960 images were obtained for only 10 objects, while fewer than 5 spectra per star were taken for 125 Be stars. A number of stars, badly classified in the Data Bank, were rejected after checking all the references given in the CDS bibliography (SIMBAD) of Strasbourg. We also eliminated well-known interactive binaries (e.g. AX Mon) for which a phase-dependent selection and presentation would have been necessary.

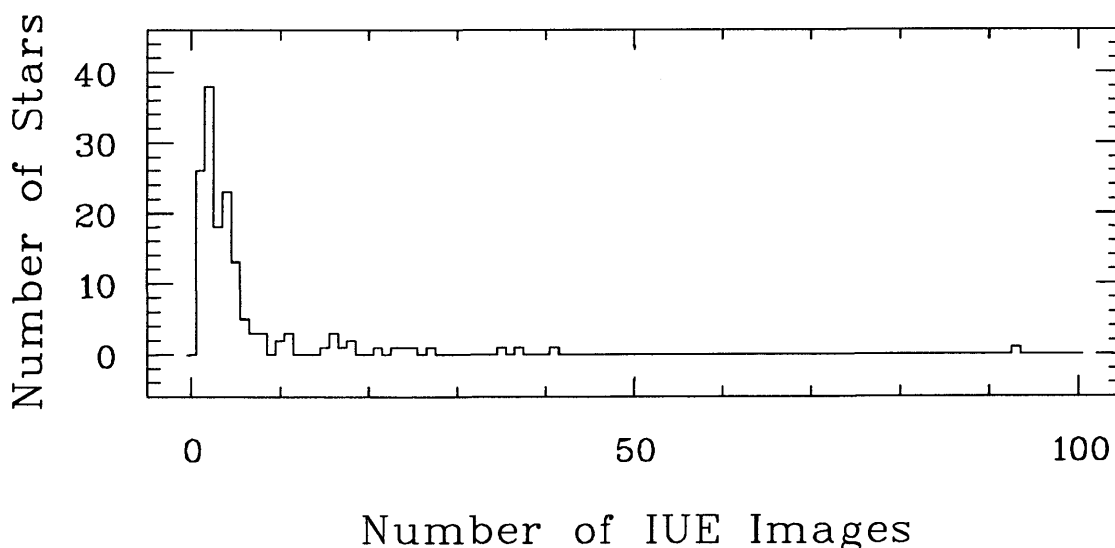


Fig. 1. Histogram of the IUE dearchived spectra. Number of stars versus number of observations.

In order to provide an Atlas of reasonable size which gives information on the largest possible sample of Be stars, it was necessary to limit in Part II: (a) the number of spectral regions to be presented, and (b) the number of spectra per star. We decided to select five wavelength ranges for the SWP spectra and two wavelength ranges for the LWR/LWP spectra. These spectral ranges contain the NV, CIV, SiIV, AlIII resonance lines and the low excitation FeIII line at 1895Å of multiplet 34 for the SWP spectra, and the FeII and MgII resonance lines for the LWR/LWP spectra. In spite of the fact that the NV resonance lines are very badly located and

difficult to detect and identify in these IUE echelle spectra, i.e. in the higher orders where extraction of data is very poor, we decided to include them for two reasons: first, their presence is of great importance in Be star modelling, and second, there are several cases where their identification is not in doubt (e.g. HD 5394, 58978). Therefore, we warn the reader that any conclusion concerning the existence or non-existence of these lines must be made only after a careful analysis of the spectra not on plots.

Because variability studies have been or are being published in detail, we decided not to duplicate data which exist in the literature. We therefore retrieved and present for these frequently observed and well-known stars only a few spectra illustrating their variable behaviour. For the other stars, all the observed spectra were retrieved but we only show the best quality image(s) and /or those which show spectral changes. This selection reduced the number of retrieved IUE spectra to 994 for 166 stars. Fig. 1 shows a histogram of these observations. After visual inspection of the plots of all these dearchived spectra, we selected 389 spectra for these 166 Be stars, which are presented in Part II of the Atlas.

2.2 The optical spectra

The optical spectra were obtained for the long term Be star program of V.D. and collaborators at the Haute-Provence Observatory (OHP) and at the European Southern Observatory (ESO). The photographic plates were obtained at the Coude focus of the 1.9 m and 1.5 m telescopes at OHP and at the 1.5 m telescope at ESO. The reciprocal dispersion is $7.2 \text{ \AA mm}^{-1}$ (GC), $9.7 \text{ \AA mm}^{-1}$ (W), $12 \text{ \AA mm}^{-1}$ (GB and G), $20 \text{ \AA mm}^{-1}$ (GA and F). Kodak IIaF or 12704 hypersensitized emulsion and IIaO baked or IIIaJ emulsions were used for the red ($H\alpha$) and blue ($H\beta$) plates respectively. Each spectrum was photometrically calibrated with the auxiliary spectrograph ETA.

High resolution $H\alpha$ profiles were also obtained with the CCD camera ISIS at the OHP (resolution $0.18 \text{ \AA}$ and $S/N \approx 150$) (see Felenbok et. al 1986). We selected from our optical observational material 144 spectra (112 for the $H\alpha$ and 32 for the $H\beta$ line-profiles) obtained for 120 Be stars during the decade of observation of the IUE spectra, i.e. 1978 - 1988. In only a few cases, spectra were taken from outside this time-interval.

3. Data handling and processing

3.1 The far UV spectra

The echelle orders of the four IUE spectra of Pleione presented in Part I of the Atlas were connected at fixed wavelengths, and a low pass gaussian filter was applied. The error flags were taken into account as described below. The spectra were plotted in IUE flux number divided by the exposure time in seconds. This Part I of the Atlas was made at the Trieste Observatory. All the IUE dearchived spectra for Part II of the Atlas were checked by M.B. for identification, exposure times, slit aperture etc. at VILSPA. Most of the spectra were processed with the standard IUE SIPS reduction software at the time of observation (see Turnrose and Thompson, 1984). That is, the software is not the same for all the spectra presented in the Atlas. However, most of the spectra obtained between 1978 June and 1982 July were already reprocessed in the Data Bank. Some spectra processed with the wrong

aperture were reprocessed. It was beyond the scope of the Atlas to reprocess with the latest software all the spectra.

The extraction of spectral orders from the original IUE spectra, truncation, and rebinning to a constant wavelength step of 0.02 Å were made under MIDAS environment at VILSPA. The resulting files, stored into FITS format tapes, were read into the Astronet Trieste OAT MIDAS system and plotted at the Trieste Observatory. From the visual inspection of this first set of plots, 389 spectra for 166 Be stars were selected for Part II of the Atlas.

The selected spectra were then plotted in IUE flux number divided by the exposure time (in seconds) versus wavelength (in Angstroms) for those images observed with the large aperture. That is, the sensitivity function of the IUE detectors is taken for unity. This scale can be transformed in absolute flux by using the latest absolute calibration of the IUE (Cassatella et al. 1988), for these large aperture images only. For images observed with the small aperture, the IUE flux number was also divided by the exposure time (in seconds), and the scaling factor 1.524 was applied to the flux ratio of the large and small aperture (Talavera, 1987). But it is clear that these flux numbers cannot provide any absolute flux calibration because the scaling factor assumes that the star is always centered on the slit, which is certainly not the case.

We decided to present the spectra in IUE flux number per second, rather than absolutely calibrate them or normalize them to the local continuum, for two reasons. First, an absolute calibration would have necessitated a reprocessing of all those high resolution IUE spectra processed before 1982, which was beyond the scope of this Atlas. Second, the normalization to the local continuum would have required the tracing of the continuum over a much broader wavelength range than the 1 or 2 orders extracted for each selected spectral region. Tracing the continuum over a too-narrow wavelength range may produce spurious emission components, especially in the region of the CIV resonance lines. Inspection of the spectrum of Pleione presented in Part I of the Atlas clearly shows the difficulty of tracing the continuum over a too-narrow wavelength range. Note that the slope of the apparent continuum is produced by two main causes, the sensitivity function of the cameras and the radiative flux distribution of the star. In the NV spectral region, the rapid loss of sensitivity, and for the late B and cooler stars of the radiative flux, obviously makes this IUE NV region extremely difficult to study. The connection of the orders where spectral lines of special interest are located (NV, SiIV, AlIII, MgII) was performed by using a weighted average of the outgoing and incoming orders. An error code was set, which validates all bins showing an error flag greater than -275 if the percentage of valid bins exceeds 90 percent. In this case, the valid bins are plotted. The severity level (-275) and quality threshold (Q=90 percent) were chosen in order to accommodate the major part of the IUE data according to the IUE error codes (see the IUE Users guide, 1984). When the percentage of valid bins was lower than 90 percent, the error code handler commands the plotting of all bins, except the reseaux marks, and the percentage of bins, Q, with error severity lower than -275 is automatically overwritten on top of the relevant plot. This procedure allows the presentation of interesting IUE data, while warning the reader about its quality. The data were then smoothed in order to equalize the S/N over all the Atlas. This was done by a standard moving average low-pass gaussian filter. Error flagged bins were replaced by linear interpolated segments between the first preceding and first following valid bins. The standard half-width of the filter was set to 0.08 Å for data obtained before 1981, November 10, and to 0.11 Å after this date to take into account the change in IUE software. The final homogenization of the S/N over the Atlas was made after visual inspection of all the plots by manual scaling of the standard procedure.

3.2 The optical spectra

The photographic material was digitized at the Trieste Observatory on a PDS 1010A microdensitometer with a 10 microns slit and a step of 5 microns. The data reduction was done by means of the standard ELSPEC software package (Pasian, Rusconi, Sedmak, 1982). Line-profiles were normalized to the local continuum which was traced manually over the plot of the entire spectrum. Plate defects were checked and recognized on original spectra and then eliminated in the final plotting. All spectra were smoothed with the standard procedure with a standard half-width of the filter set to 0.5 Å and then scaled manually in order to homogenize the S/N between different spectra of different stars.

The reduction of the CCD H α line-profiles was performed with the ESO Image Handling and Processing system (IHAP) at the Institut d'Astrophysique of Paris.

4. Description of the Atlas

4.1 Content of the Atlas

The far UV spectrum of Pleione (HD23862) from 1230 Å to 3030 Å observed during its Be and Be-shell phases is shown in Part I.

The contents of Part II are given in Table 1. The successive columns of this table give: the HD number, the name of the star or HR number, the Emission Catalogue number (MWC or CDS), the right ascension and declination for the year 2000, the spectral type, the $v \sin i$ in km s^{-1} , the V magnitude as given by the CDS (Strasbourg), the total number of retrieved IUE spectra per star, the number of IUE spectra, and H α and H β line-profiles presented in the Atlas. The spectral type and $v \sin i$ values are taken from Slettebak (1982) when available. Spectral types and $v \sin i$ values, noted with an asterisk, are taken from the CDS. Fig. 2 shows the distribution of our Atlas stars as function of spectral type.

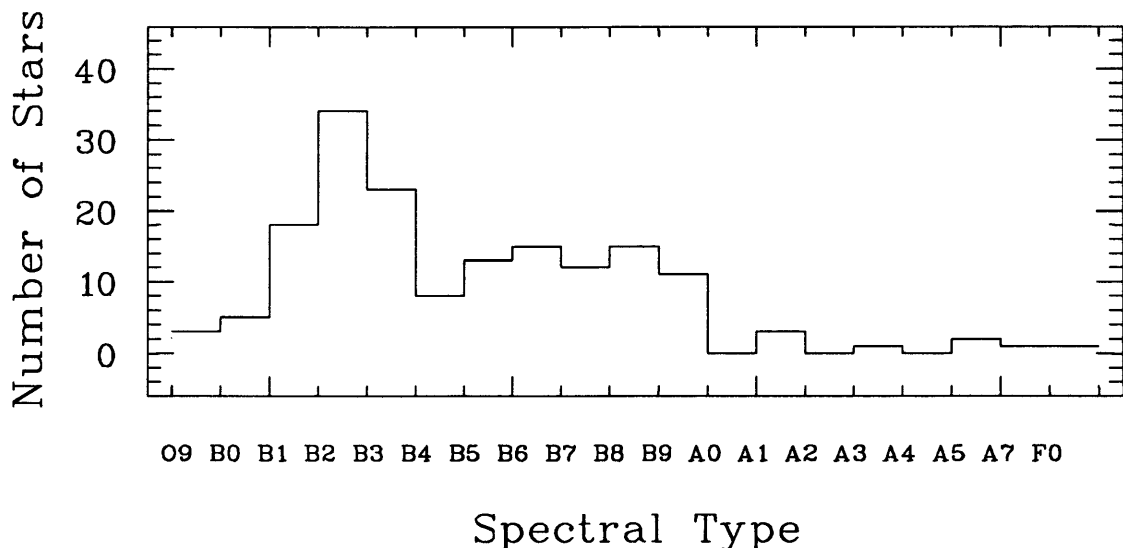


Fig. 2. Distribution of stars as function of spectral type.

We note that the emission-line peculiarity, historically associated with the Be/shell phenomenon, extends over a large range of spectral types (O to F). We also included in the Atlas the star HD698 (B5Ile) long considered as a Be star. Fig. 3 shows the distribution of the B0-B9.5 III-V Atlas emission-line stars as function of $v \sin i$, when available.

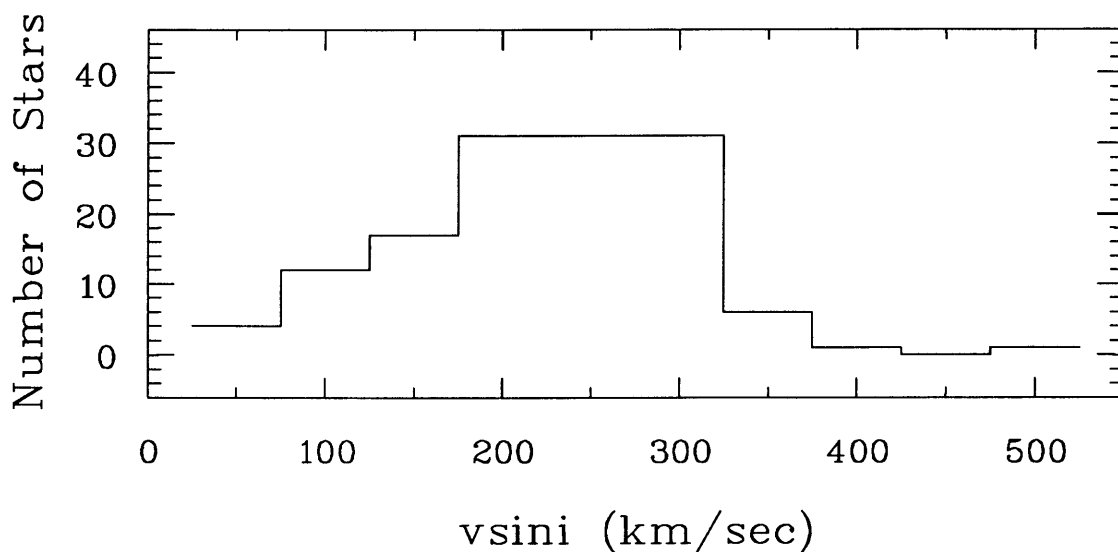


Fig. 3. Distribution of B0-B9.5 III-Ve Atlas stars as function of $v \sin i$.

4.2 Explanation of the plots

In Part I of the Atlas the far UV spectrum of Pleione (HD23862, 28 Tau) is plotted from 1230 Å to 3030 Å for the two phases, Be and Be-shell. The plots are given in IUE flux number per second (see Sect. 3.1) versus wavelength in Angstroms on a compressed wavelength scale. On the right hand side of each page are given:

- the HD number
- the spectral type
- the $v \sin i$ in km s^{-1}

On the left hand side are given:

- the number of the IUE spectrum preceded by the camera number (3 for SWP, 2 for LWR, 1 for LWP spectra)
- the aperture, indicated by L for large
- the date of observation
- the value of the quality factor Q (see Sect. 3.1)

In Part II of the Atlas, the selected spectral regions (NV, SiIV, CIV, AlIII, FeIII, FeII, MgII, H α , and H β , i.e. 9 at most) of each of the 166 stars of the Atlas are plotted on 1, 2, or 3 pages, depending on the available data, with at most 4 plots per page.

On the right hand side of each page are given:

- the HD number
- the spectral type
- the $v \sin i$ value in km s^{-1} , when available

On the left hand side are given:

- the number of the IUE spectrum preceded by the camera number (3 for SWP spectra, 2 for LWR spectra, 1 for LWP spectra)
- the aperture, indicated by L for large and S for small
- the date of observation
- the OHP or ESO number of the optical spectrum, W, GB, GA, or G, F, respectively, and CCD number (see Sect. 3.2)

Each plot contains one of the selected spectral regions.

On the X axis is plotted the wavelength in Angstroms.

On the Y axis is plotted the IUE flux number per second as explained in Sect. 3.1

On the top of each plot are given:

- the serial number of the IUE or optical spectra plotted if more than 1 (3 at maximum)
- the quality factors Q if lower than 90 percent (see Sect. 3.1)
- the value of the offset of the successive spectra (in units of the flux number) when more than one spectrum is plotted.

Vertical tick marks indicate the rest wavelength of the spectral line of interest located in the spectral region (i.e., NV, SiIV, CIV, AlIII, FeIII, FeII, MgII, H α , H β).

Horizontal lines at the bottom of each spectral regions made of two adjacent orders indicate the domain of overlap of the orders.

Table 1

HD	Name/HR	EM CAT	RA (2000)	DEC (2000)	Sp. Type	V mag	vsini	IUE/r	IUE/p	Ha/p	Hb/p
144	10 Cas	MWC	00 06 26.4	+64 11 46	B8.5Ive	5.58	120	3	3	1	0
698		MWC	00 11 37.0	+58 12 43	B5Ile *	7.08	50	3	3	0	0
4180	22 Cas	MWC	00 44 43.4	+48 17 04	B5Ive	4.50	220	1	1	1	0
5394	Ga Cas	MWC	00 56 42.3	+60 43 00	B0.5Ive	2.39	230	4	3	1	0
6811	42 And	MWC	01 09 30.1	+47 14 31	B6.5IIle	4.25	80	3	2	1	0
10144	Alf Eri	CDS	01 37 42.2	-57 14 11	B4Ve	0.50	225	5	2	1	0
20336	HR 985	MWC	03 19 59.2	+65 39 09	B2.5IV:e	4.80	250	2	2	0	1
21551	HR 1051	MWC	03 30 36.8	+48 06 14	B7Vsh?	5.82	300	1	1	0	0
22192	Psi Per	MWC	03 36 29.2	+48 11 35	B5IIle sh	4.23	280	8	2	1	0
22780	HR 1113	MWC	03 41 07.7	+37 34 50	B6Ve	5.55	280	2	1	1	0
23016	13 Tau	CDS	03 42 18.9	+19 42 02	B7Ve	5.69	260	5	4	1	0
23302	17 Tau	MWC	03 44 52.4	+24 06 50	B6IIle	3.70	180	11	4	1	0
23480	23 Tau	MWC	03 46 19.4	+23 56 56	B6Ive	4.18	280	21	3	1	0
23552	HR 1160	MWC	03 48 18.2	+50 44 12	B6Ve	6.15	220	1	1	0	0
23630	25 Tau	MWC	03 47 28.9	+24 06 21	B7IIle	2.90	140	17	4	1	0
23862	28 Tau	MWC	03 49 11.1	+24 08 14	B8V:e sh	5.09	320	4	3	1	0
24479	HR 1204	MWC	03 57 25.3	+63 04 20	B9Ive	4.96	100	1	1	1	0
24534	X Per	MWC	03 55 23.0	+31 02 45	O9.5IIle	6.10	200	35	4	1	1
25940	48 Per	MWC	04 08 39.5	+47 42 47	B4Ve	4.04	200	5	4	1	1
26356	HR 1289		04 28 13.4	+83 48 28	B5Ve	5.56	250	2	2	1	0
26670	HR 1305		04 16 53.5	+61 51 02	B6Ve	5.70	280	1	1	1	0
28497	HR 1423	MWC	04 29 06.9	-13 02 55	B1Ve	5.60	230	7	3	1	0
29866	HR 1500	MWC	04 44 12.9	+40 47 13	B8IVne *	6.09	300	2	2	1	0
30076	56 Eri	MWC	04 44 05.2	-08 30 13	B2Ve	5.90	180	11	2	1	1
32343	11 Cam	MWC	05 06 08.4	+58 58 21	B3Ve	5.03	100	4	2	1	0
32991	105 Tau	MWC	05 07 55.4	+21 42 18	B3Ve	5.92	200	4	4	1	1
33328	Lam Eri		05 09 08.7	-08 45 15	B2IIlep	4.25	220	24	4	1	0
33599			05 07 13.0	-61 48 18	B5psh *	8.87	-	4	2	0	0
35439	25 Ori	MWC	05 24 44.8	+01 50 47	B1Ve	4.94	320	23	2	1	0
36408	HR 1847	CDS	05 32 14.1	+17 03 30	B7IIle *	5.46	55	2	2	0	0
36576	120 Tau	MWC	05 33 31.6	+18 32 25	B1.5Ive	5.72	210	1	1	0	0
36665		MWC	05 34 39.1	+28 03 04	B8e *	8.04	-	5	2	0	0
37202	Zet Tau	MWC	05 37 38.6	+21 08 34	B1Ive sh	3.03	220	10	3	2	0
37490	Ome Ori	MWC	05 39 11.1	+04 07 17	B2IIle	4.57	160	4	3	1	0
37795	Alf Col	MWC	05 39 38.9	-34 04 26	B7Ive	2.60	180	5	2	1	0

Table 1 continued

HD	Name/HR	EM CAT	RA (2000)	DEC (2000)	Sp. Type	V mag	vsini	IUE/r	IUE/p	Ha/p	Hb/p
37967	HR 1961	MWC	122	05 43 19.4	+23 12 16	B2.5Ve *	6.20	-	1	1	1
38090	12 Lep			05 42 13.9	-22 22 26	A3IIIsh	5.89	180	2	1	0
39060	Bet Pic			05 47 17.0	-51 04 04	A5IVsh	3.80	120	93	3	0
42054	HR 2170	MWC	134	06 07 03.6	-34 18 43	B5Ve	5.83	220	2	1	1
42111	HR 2174			06 08 57.8	+02 29 59	A1IVsh	5.73	180	2	0	0
43544	HR 2249	CDS	587	06 16 07.7	-16 37 05	B3Ve	5.92	300	1	1	0
44458	HR 2284	MWC	138	06 21 24.6	-11 46 24	B1.5Ve	5.54	200	2	0	1
45314		MWC	140	06 27 15.8	+14 53 22	O9pe *	6.64	-	6	4	0
45542	Nu Gem	MWC	141	06 28 57.8	+20 12 44	B6IVe	4.14	170	5	4	1
45677		MWC	142	06 28 17.4	-13 03 10	B9pe sh*	7.55	-	11	3	0
45725	Bet Mon A	MWC	143	06 28 49.0	-07 01 58	B4Ve sh	4.60	300	5	2	0
45726	Bet Mon B			06 28 49.4	-07 02 00	B3ne *	5.40	125 *	1	1	0
45727	Bet Mon C	MWC	144	06 28 49.5	-07 02 02	B3e *	5.60	330 *	1	1	0
45995	HR 2370	MWC	146	06 31 09.5	+11 15 04	B2IVe	6.03	250	3	3	1
47054	HR 2418	MWC	150	06 36 35.3	-05 12 39	B8IVe	5.57	260	1	1	0
48917	10 Cma	MWC	152	06 44 28.4	-31 04 14	B2IIIE	5.20	200	3	0	0
50013	Kap Cma	MWC	155	06 49 50.4	-32 30 31	B2IVe	3.96	220	2	1	1
50083		MWC	156	06 51 45.7	+05 05 05	B2Ve *	6.92	-	2	1	0
50123	HR 2545	MWC	157	06 50 23.3	-31 42 23	B6IVe+A	5.72	220+100	16	3	0
50138		MWC	158	06 51 33.3	-06 58 00	B9Ve *	6.67	-	18	2	1
52918	19 Mon			07 02 54.7	-04 14 21	B1.5IIIE	4.99	270	10	3	1
54309	HR 2690	MWC	167	07 07 22.5	-23 50 26	B2IVe	5.71	200	2	1	0
56014	27 Cma	MWC	170	07 14 15.2	-26 21 09	B3IIIEpsh	4.65	150:	7	4	1
56139	Ome Cma	MWC	171	07 14 48.7	-26 46 22	B2.5Ve	3.73	80	6	2	0
58050	OT Gem	MWC	176	07 24 27.6	+15 31 02	B2Ve *	6.44	140 *	5	3	1
58343	HR 2825	MWC	177	07 24 40.1	-16 12 04	B3Ve	5.33	<40	8	3	0
58715	Bet CMi	MWC	178	07 27 09.2	+08 17 23	B8Ve	2.90	245	4	4	1
58978	HR 2855	MWC	179	07 26 59.4	-23 05 10	B0.5IVe	5.61	280	41	3	0
60606	z Pup	MWC	183	07 33 51.0	-36 20 18	B3Ve	5.54	230	2	2	0
60855	HR 2921	MWC	565	07 36 03.8	-14 29 34	B3IVe	5.70	230	1	1	0
63462	Oml Pup	MWC	186	07 48 05.1	-25 56 14	B1IVe	4.50	320	2	2	0
65575	Kh1 Car			07 56 46.8	-52 58 57	B3IVpe *	3.50	-	2	2	0
66194	HR 3147			07 58 50.5	-60 49 28	B2.5IVe	5.81	200	2	2	0
67536	HR 3186			08 04 43.0	-62 50 11	B2.5Vne *	6.30	290 *	4	3	1
67888	HR 3195	CDS	716	08 08 37.6	-37 40 54	B4III-Ve*	6.37	-	3	2	0

Table 1 continued

HD	Name/HR	EM CAT	RA(2000)	DEC(2000)	Sp. Type	V mag	vsini	IUE/r	IUE/p	Ha/p	Hb/p
68980	r Pup	MWC	192	08 13 29.5	-35 53 59	B1.5Ive	4.81	115	1	1	0
72067	HR 3356			08 29 07.6	-44 09 37	B2.5Ve	5.79	150	3	2	0
75311	f Car	MWC	195	08 46 42.6	-56 46 11	B2.5Ve	4.51	240	5	3	0
78764	HR 3642	MWC	196	09 05 38.5	-70 32 19	B2Ive	4.70	120	3	2	1
83953	I Hya	MWC	197	09 41 17.1	-23 35 30	B5Ve	4.77	260	5	4	1
87543	HR 3971			10 03 34.3	-61 53 02	B7IVne *	6.14	-	2	2	1
87643		MWC	198	10 04 30.3	-58 39 52	B2e *	8.51	-	2	1	0
88195	17 Sex			10 10 07.6	-08 24 29	A1Vsh	5.91	100 *	2	2	0
88661	HR 4009	MWC	199	10 11 46.5	-58 03 38	B2Ive	5.72	220	3	3	1
88825	HR 4018			10 13 01.3	-59 55 05	B4Ve *	6.10	-	2	2	0
89080	Ome Car	CDS	757	10 13 44.6	-70 02 16	B8IIIE sh	3.30	220	1	1	0
89890	HR 4074	MWC	201	10 21.0	-56 02	B3IIIEp	4.50	70	5	2	1
91120	HR 4123	MWC	205	10 30 59.9	-13 35 18	B9Ive	5.60	250	4	4	1
91465	p Car	MWC	208	10 32 01.5	-61 41 07	B4Ve	3.30	250	2	2	1
93563	HR 4221	CDS	812	10 46 57.6	-56 45 25	B8IIIE sh	5.23	280	2	2	1
94878		MWC	215	10 55 59.0	-60 23 33	Be	8.73	-	3	2	0
94910		MWC	216	10 56 11.6	-60 27 13	B2:pe *	6.96	-	18	3	0
98058	Phi Leo			11 16 40.0	-03 39 04	A7IVsh	4.50	230	2	2	0
98922				11 22 31.7	-53 22 12	B9Ve *	6.70	-	1	1	1
100673	A Cen	CDS	861	11 34 45.9	-54 15 51	B9Ve	4.62	125	1	1	1
102567				11 48 00.1	-62 12 24	B1Vne *	8.95	-	3	2	0
102776	j Cen	MWC	218	11 49 41.2	-63 47 18	B4Ve	4.32	210	4	3	1
105435	Del Cen	MWC	219	12 08 21.6	-50 43 20	B2Ive	2.60	220	2	2	1
108283	14 Com			12 26 24.0	+27 16 06	F0IIISH	5.00	200	2	2	1
109387	Kap Dra	MWC	222	12 33 29.5	+69 47 17	B5IIIE	3.87	200	3	3	1
110335	39 Cru	MWC	223	12 41 56.7	-59 41 08	B6Ive	4.93	250	3	3	1
110432	HR 4830	MWC	224	12 42 50.3	-63 03 31	B1IIIE	5.24	300	16	3	1
112028	HR 4893			12 49 14.4	+83 24 45	A1IVsh	5.28	200	2	2	1
112091	Mu.02 Cru	MWC	225	12 54 37.0	-57 10 05	B5Ve	5.18	220	1	1	0
113120	HR 4930	MWC	226	13 03 05.4	-71 28 33	B2IIIE	6.03	300	4	3	0
120324	Mu Cen	MWC	229	13 49 37.0	-42 28 24	B2IV-Ve	2.90	155	37	4	1
120991	HR 5223	MWC	230	13 53 57.0	-47 07 40	B2IIIEp	6.10	70	3	2	1
124367	HR 5316	MWC	231	14 14 57.1	-57 05 08	B4Ve	5.10	300	1	1	1
127972	Eta Cen	MWC	232	14 35 30.5	-42 09 26	B2Ive	2.31	350	16	3	1
134481	Kap01 Lup	CDS	883	15 11 56.4	-48 44 13	B9Ve	4.14	160	2	2	1

Table 1 continued

HD	Name/HR	EM CAT	RA(2000)	DEC(2000)	Sp. Type	V mag	vsini	IUE/r	IUE/p	Ha/p	Hb/p
135734	Mu Lup	CDS 884	15 18 32.0	-47 52 28	B8Ve comp	4.27	150/60	4	3	1	0
137387	Kap01 Aps	MWC 235	15 31 30.7	-73 23 21	B3Ive 2sp?	5.48	250/350	2	2	1	0
138749	Tet CrB	MWC 237	15 32 55.8	+31 21 33	B6IIie	4.14	320	4	3	1	0
142926	4 Her	MWC 584	15 55 30.6	+42 33 57	B7Ive sh	5.75	300	3	3	2	0
142983	48 Lib	MWC 239	15 58 11.3	-14 16 45	B3:IV:e sh	4.88	400	27	2	0	0
148184	Khy Oph	MWC 241	16 27 01.3	-18 27 21	B1.5Ve	4.42	140	6	2	0	0
149671	Eta01 Tra		16 41 23.2	-68 17 45	B7Ive	5.90	230	4	3	1	0
149757	Zet Oph		16 37 09.4	-10 34 03	O9.5Ve	2.60	320	4	3	1	0
150422			16 43 07.5	-46 30 23	B1/B2ne *	8.94	-	1	1	0	0
153261	HR 6304	MWC 245	17 01 47.3	-58 57 29	B2IVne *	6.11	200 *	2	2	1	1
157042	Iot Ara	MWC 258	17 23 16.0	-47 28 04	B2.5Ive	5.25	320	3	2	1	1
158427	Alf Ara	MWC 261	17 31 50.6	-49 52 31	B3Ve	3.00	250	5	3	0	0
158643	51 Oph	CDS 914	17 31 24.8	-23 57 44	B9.5Ive	4.81	220	4	4	1	0
162732	88 Her	CDS 921	17 50 03.2	+48 23 38	B5-6Ivesh #	6.68	300 *	2	2	1	0
164284	66 Oph	MWC 278	18 00 15.7	+04 22 07	B2IV-Ve	4.64	240	4	2	1	0
166014	Omi Her		18 07 32.5	+28 45 44	B9.5IIie	3.83	160	1	1	1	0
167128	HR 6819	CDS 966	18 17 07.4	-56 01 23	B3IIie	5.33	50	2	2	1	0
168957		MWC 292	18 21 27.7	+25 03 23	B3Ve *	7.01	100 *	1	1	0	0
169033	HR 6881	MWC 602	18 23 12.1	-12 00 53	B8Ve	5.73	200	1	1	1	0
173219		MWC 304	18 44 33.3	-07 06 38	B1:V:npe *	7.81	-	2	2	0	0
173948	Lam Pav	MWC 963	18 52 12.9	-62 11 15	B1.5IIie	4.22	170	2	2	0	0
175869	64 Ser	CDS 1037	18 57 16.5	+02 32 08	B8Ive	5.57	150	3	3	0	0
178175	HR 7249	MWC 311	19 08 16.6	-19 17 25	B2Ve	5.54	120	6	2	2	0
178475	Iot Lyr		19 07 18.0	+36 06 01	B5Ve	5.28	230	1	1	0	0
179343		MWC 978	19 12 03.2	+02 37 22	B9e *	6.92	350 *	1	1	0	0
180968	2 Vul		19 17 43.5	+23 01 32	B0.5Ive *	5.43	330 *	4	4	1	0
183362	HR 7403	MWC 318	19 27 36.4	+37 56 28	B3Ve *	6.32	245 *	2	2	1	0
183656	HR 7415	MWC 988	19 30 33.0	+03 26 40	B6e sh	6.05	300	6	3	1	0
183914	Bet Cyg B	MWC 618	19 30 45.3	+27 57 55	B8Ve	5.15	250	4	4	0	0
184279		MWC 319	19 33 36.9	+03 45 41	B0.5Ive *	6.94	230 *	15	3	1	1
185037	11 Cyg	MWC 619	19 35 48.2	+36 56 40	B8Ve	6.04	300	4	3	0	0
187811	12 Vul	MWC 323	19 51 03.9	+22 36 37	B3Ve	4.94	230	7	4	0	0
189687	25 Cyg	MWC 624	19 59 55.1	+37 02 35	B2.5Ve	5.17	200	1	1	1	0
191610	28 Cyg	MWC 329	20 09 25.5	+36 50 22	B3Ive	4.93	320	25	4	1	0
192044	20 Vul	MWC 331	20 12 00.6	+26 28 44	B7Ive	5.91	280	2	2	0	0

Table 1 continued

HD	Name/HR	EM CAT	RA(2000)	DEC(2000)	Sp. Type	V mag	vsini	IUE/r	IUE/p	Ha/p	Hb/p
192518	21 Vul		20 14	14.4	+28 41 42	5.18	200	2	2	1	0
192685	HR 7739		20 15	15.8	+25 35 31	4.80	250 *	4	3	1	0
193182		MWC 632	20 17	25.1	+39 35 37	6.51	200 *	5	2	0	1
193911	25 Vul		20 22	03.3	+24 26 46	5.52	200	2	2	1	0
194335	HR 7807		20 23	44.3	+37 28 35	5.88	350	1	1	1	0
195325	1 Del		20 30	17.8	+10 53 45	6.08	280:	8	2	1	0
198183	Lam Cyg		20 47	24.4	+36 29 27	4.53	120	4	3	1	0
200120	59 Cyg		20 59	49.4	+47 31 15	4.74	260	4	4	1	0
200310	60 Cyg		21 01	10.8	+46 09 21	5.37	300	3	2	1	0
202904	Nu Cyg		21 17	54.9	+34 53 49	4.43	180	2	2	0	1
203467	6 Cep		21 19	22.1	+64 52 18	5.18	150	29	2	1	0
205637	Eps Cap		21 37	04.7	-19 27 58	4.68	250	15	3	2	0
206773			21 42	24.2	+57 44 10	6.87	480 *	2	2	0	1
208682	HR 8375		21 55	30.9	+65 19 15	5.88	250	2	2	0	1
209014	Eta Psa		22 00	50.1	-28 27 13	5.42	350	5	4	1	1
209409	Omi Aqr		22 03	18.7	-02 09 19	4.70	300	1	1	2	0
210129	25 Peg		22 07	50.4	+21 42 14	5.78	150	2	2	1	0
212076	31 Peg		22 21	31.0	+12 12 18	5.04	100	7	2	0	1
212571	Pi Aqr		22 25	16.5	+01 22 38	4.66	300	10	3	2	0
214748	Eps Psa		22 40	39.2	-27 02 37	4.20	180	4	4	1	0
217050	EW Lac		22 57	04.4	+48 41 03	5.42	300	11	2	0	1
217675	Omi And		23 01	55.1	+42 19 34	3.62	260	8	3	2	0
217891	Bet Psc		23 03	52.5	+03 49 13	4.53	100	6	2	1	1
218674			23 09	16.7	+49 39 02	6.74	260 *	1	1	0	0
224686	Eps Tuc		23 59	54.5	-65 34 37	4.50	280	6	4	0	0
259431			06 33	05.1	+10 19 20	8.74	-	2	2	0	0

from Doazan et al.(1986)

5. Bibliography

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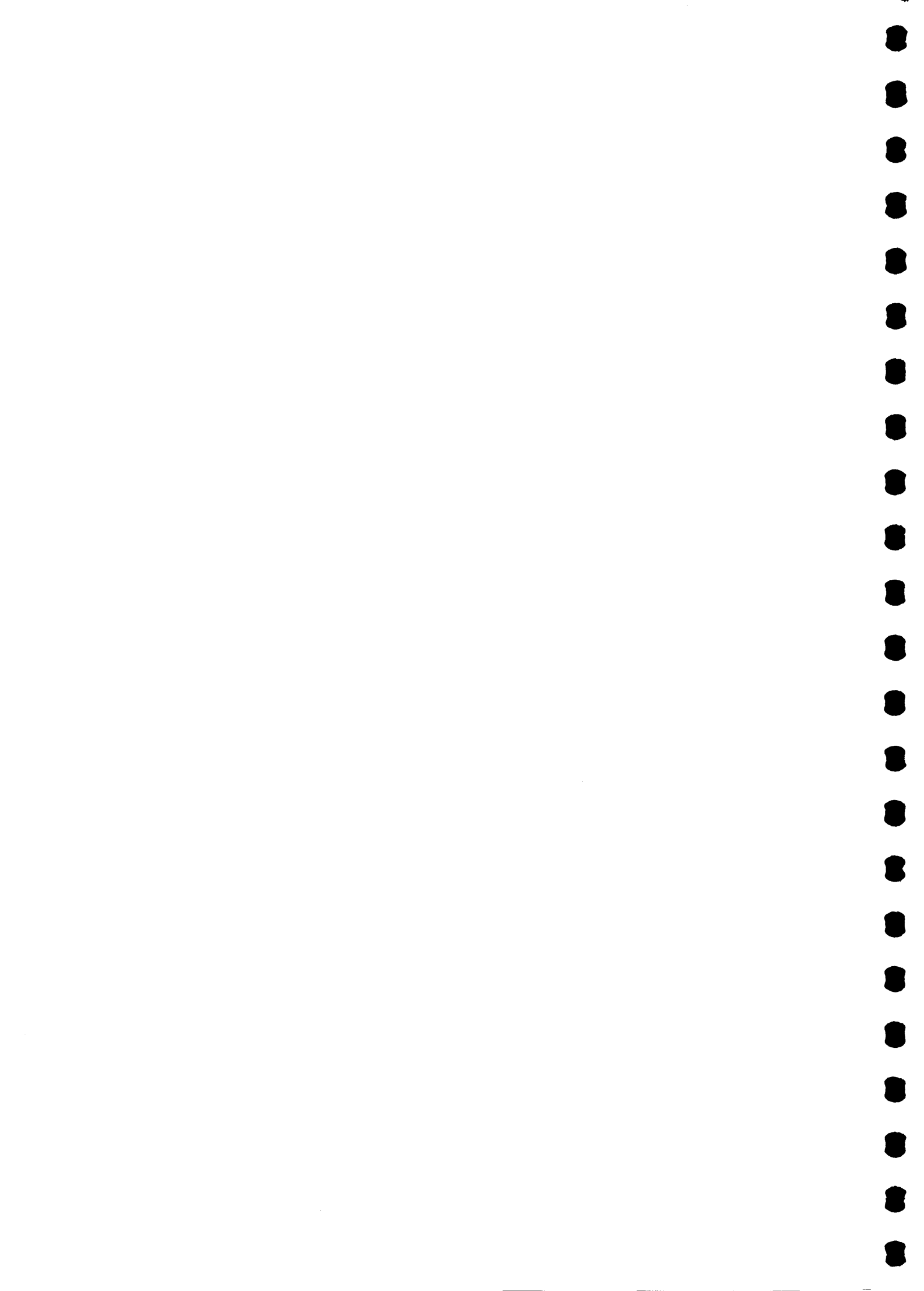
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Astrophysical Journal	Ap.J.
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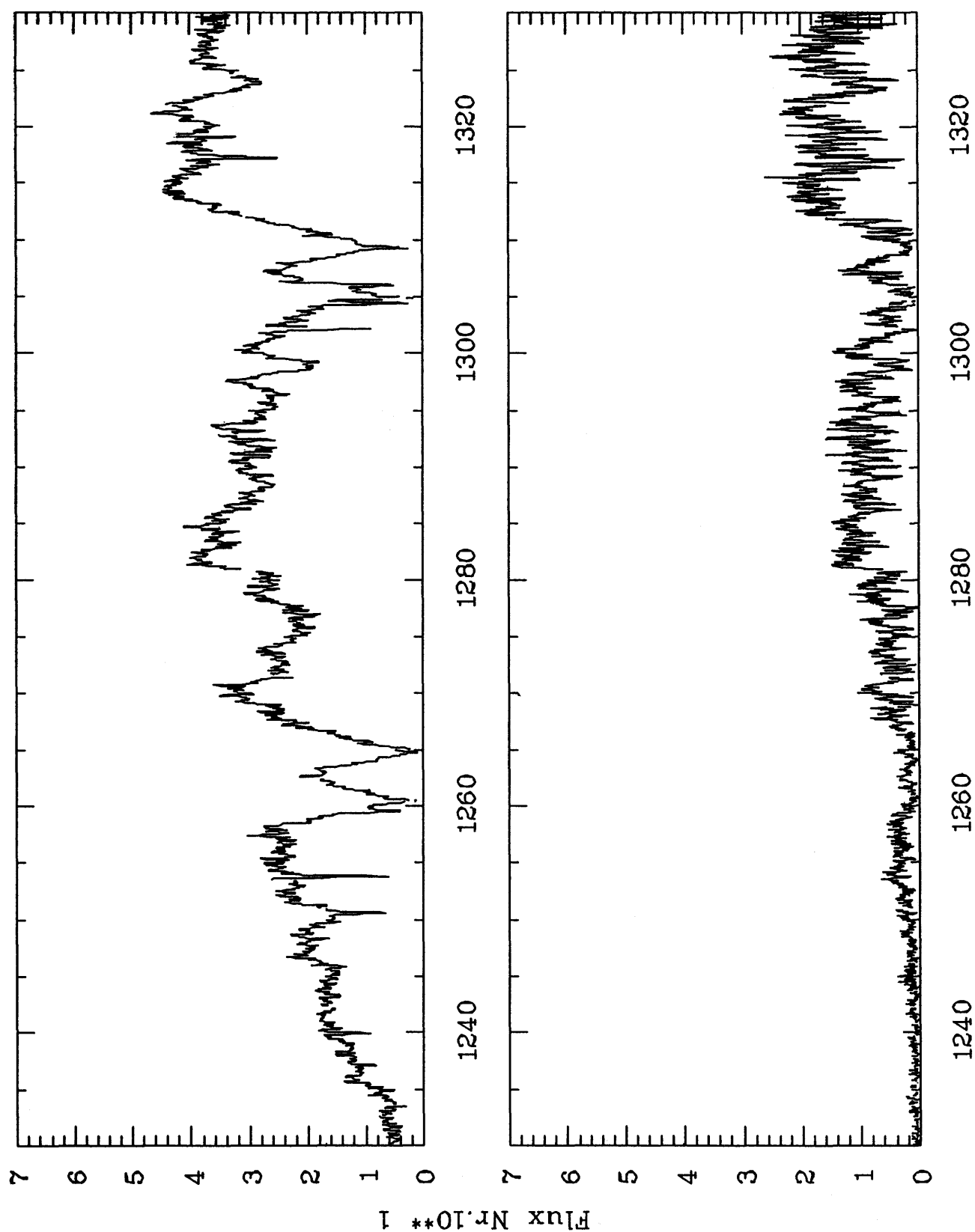
Part I

The Be and Be-shell phases of PLEIONE
(HD23862, 28 Tau) from 1230 Å to 3030 Å

HD23862

B8V:e shell

vsini 320

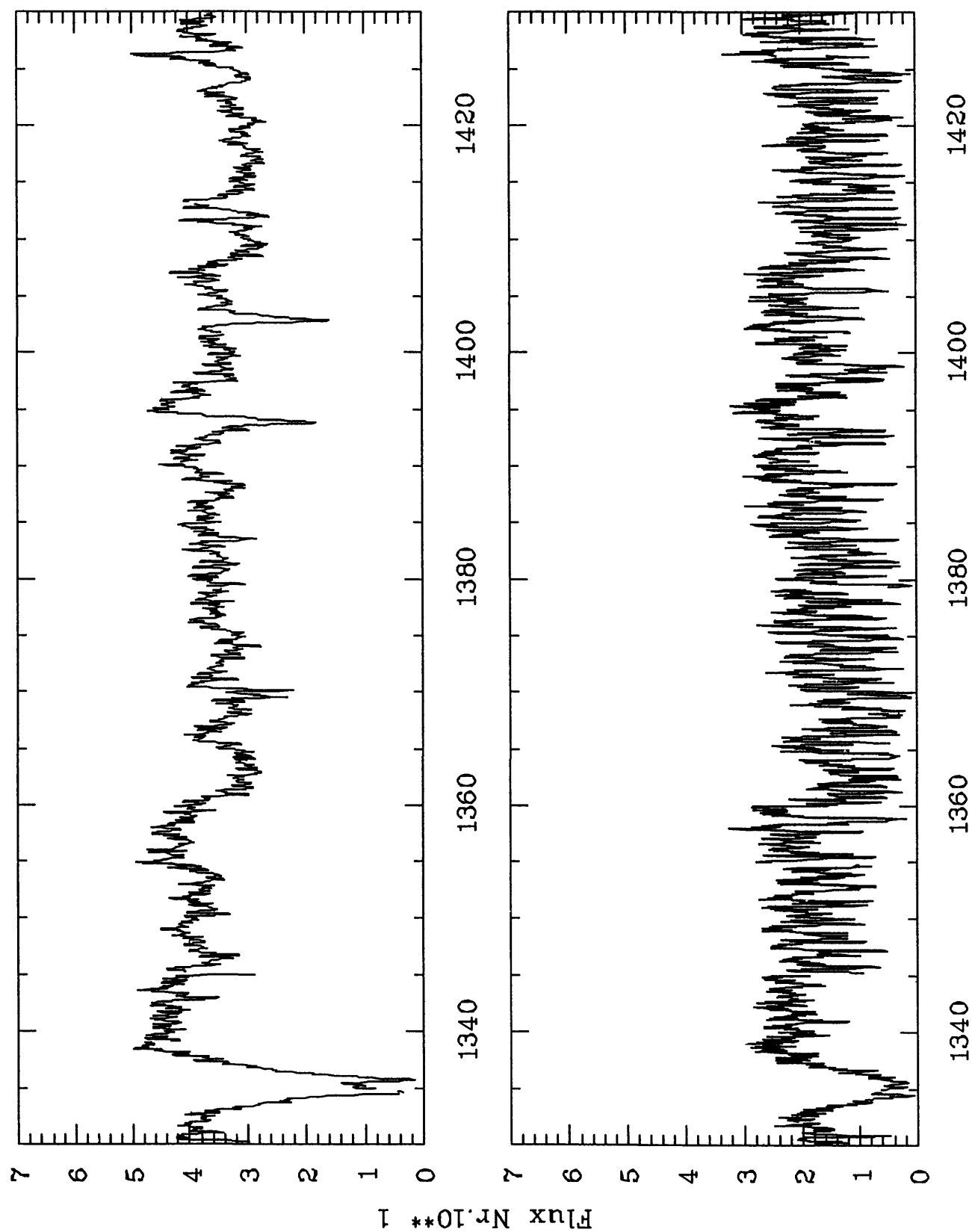


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 Be shell phase IUE 3 05987 L 79.07.29 Q=0.92

HD23862

B8V:e shell

vsini 320

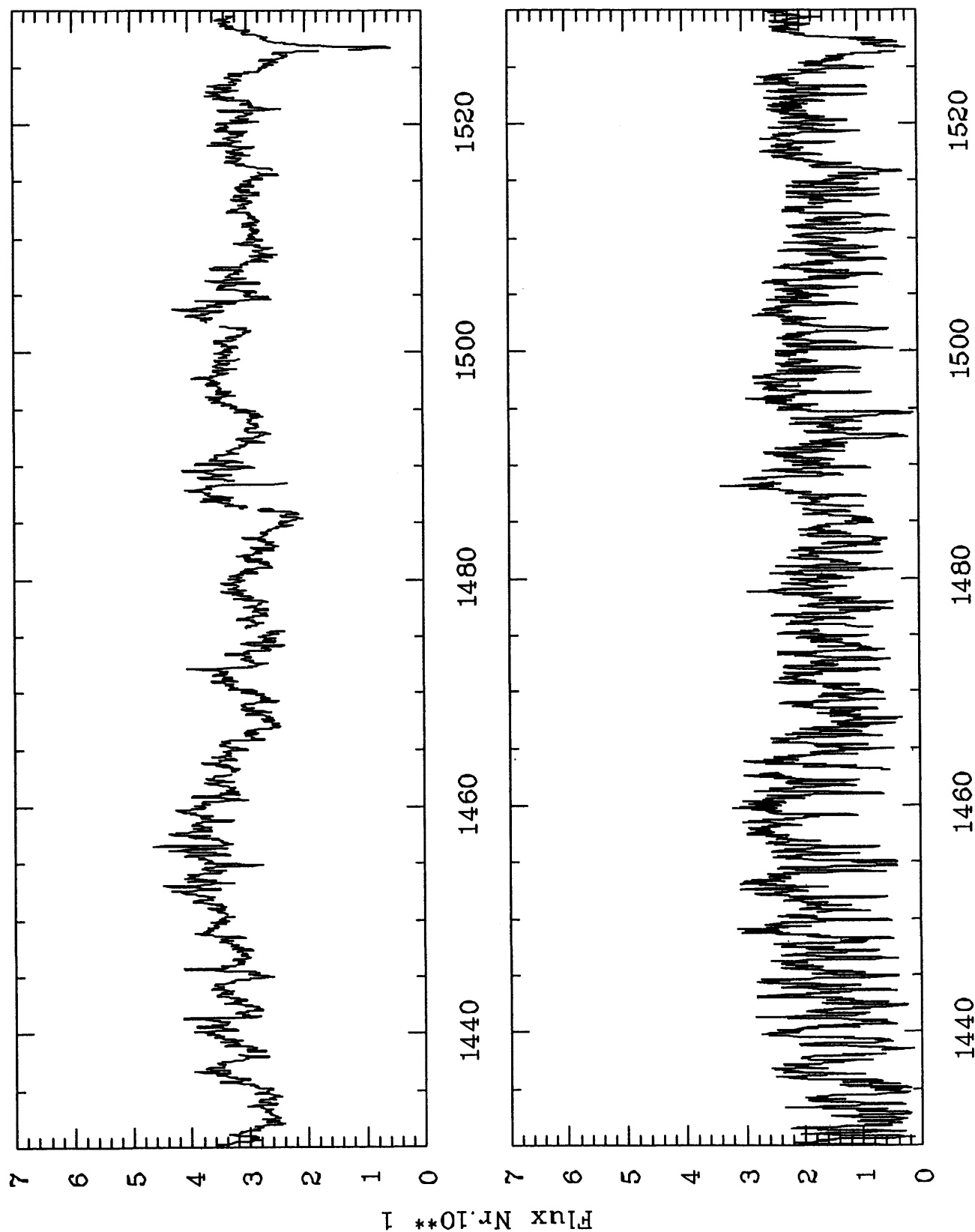


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HD23862

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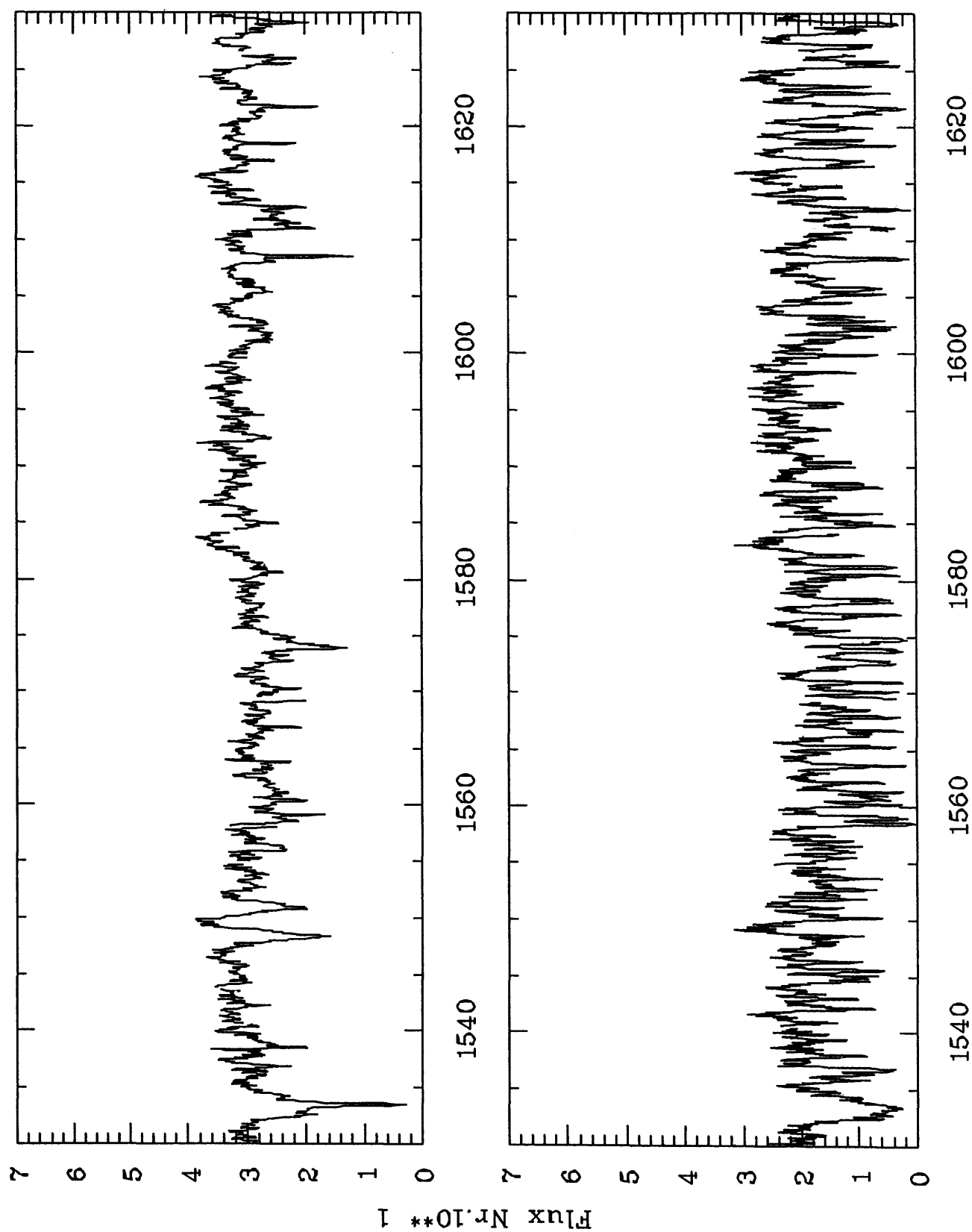


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HD23862

B8V:e shell

vsini 320

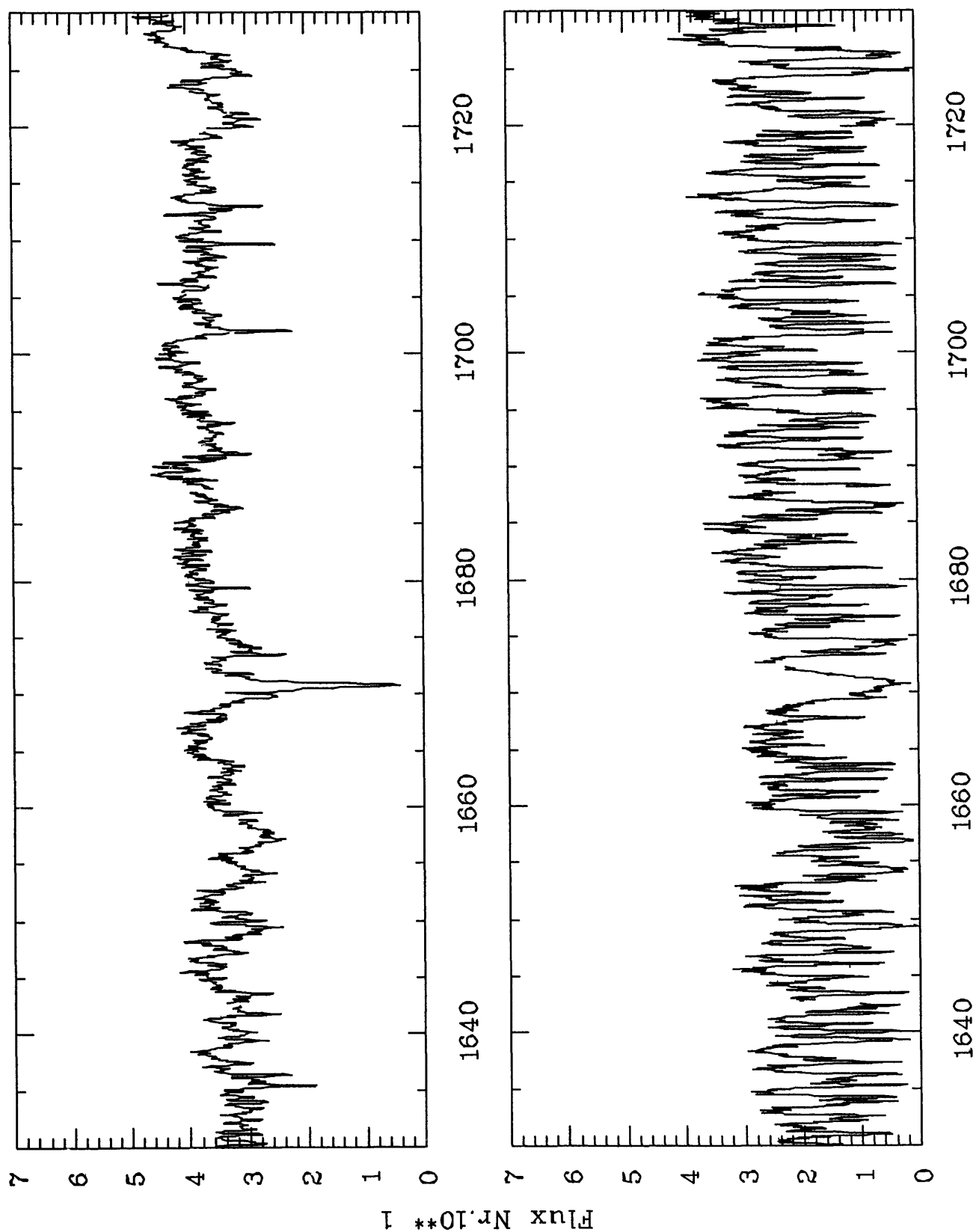


Be phase (top) IUE 3 37197 L 89.09.27 Q=0.98
 Be shell phase IUE 3 05987 L 79.07.29 Q=0.98

HD23862

B8V:e shell

vsini 320

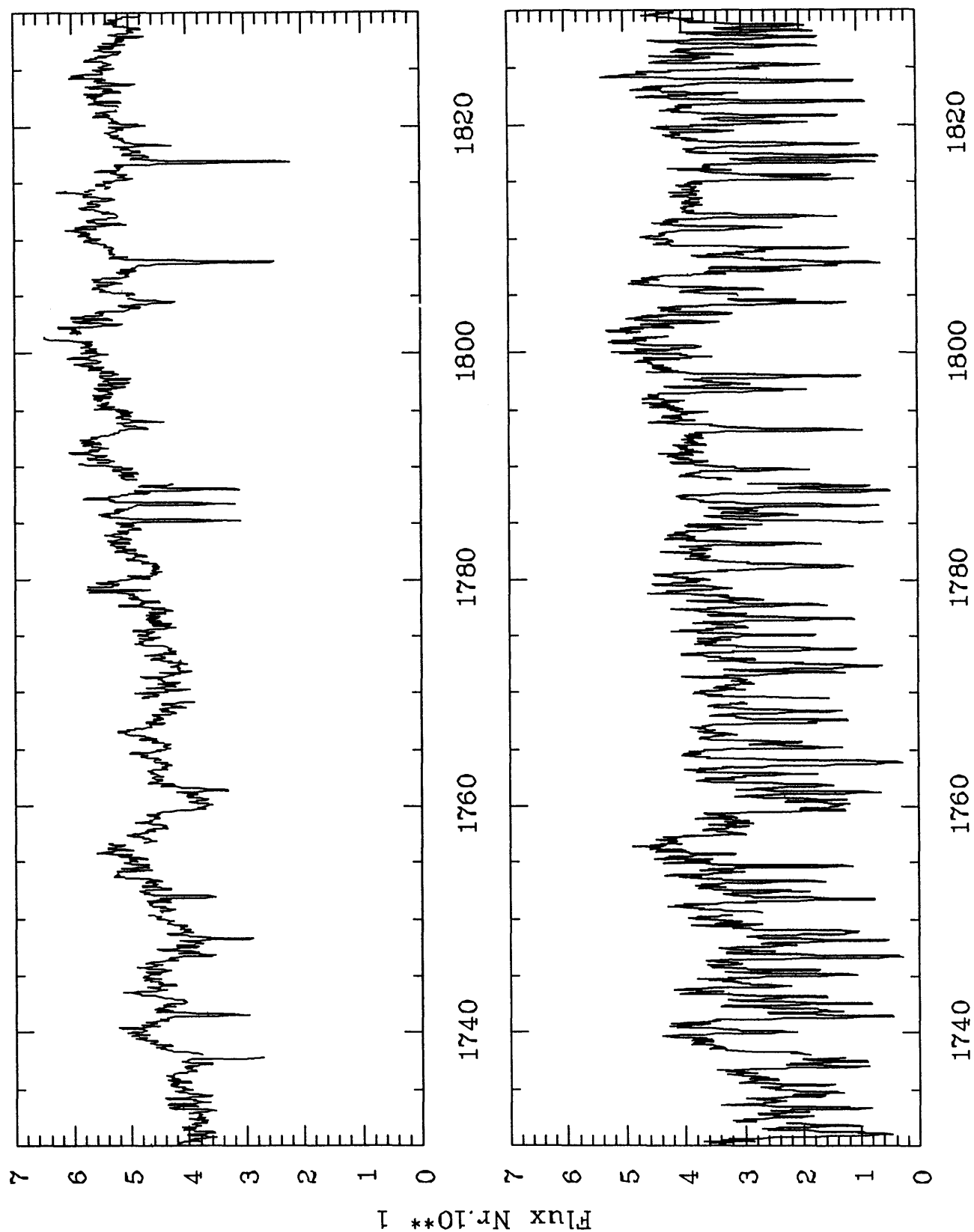


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 Be shell phase IUE 3 05987 L 79.07.29 Q=0.95

HD23862

B8V:e shell

vsini 320

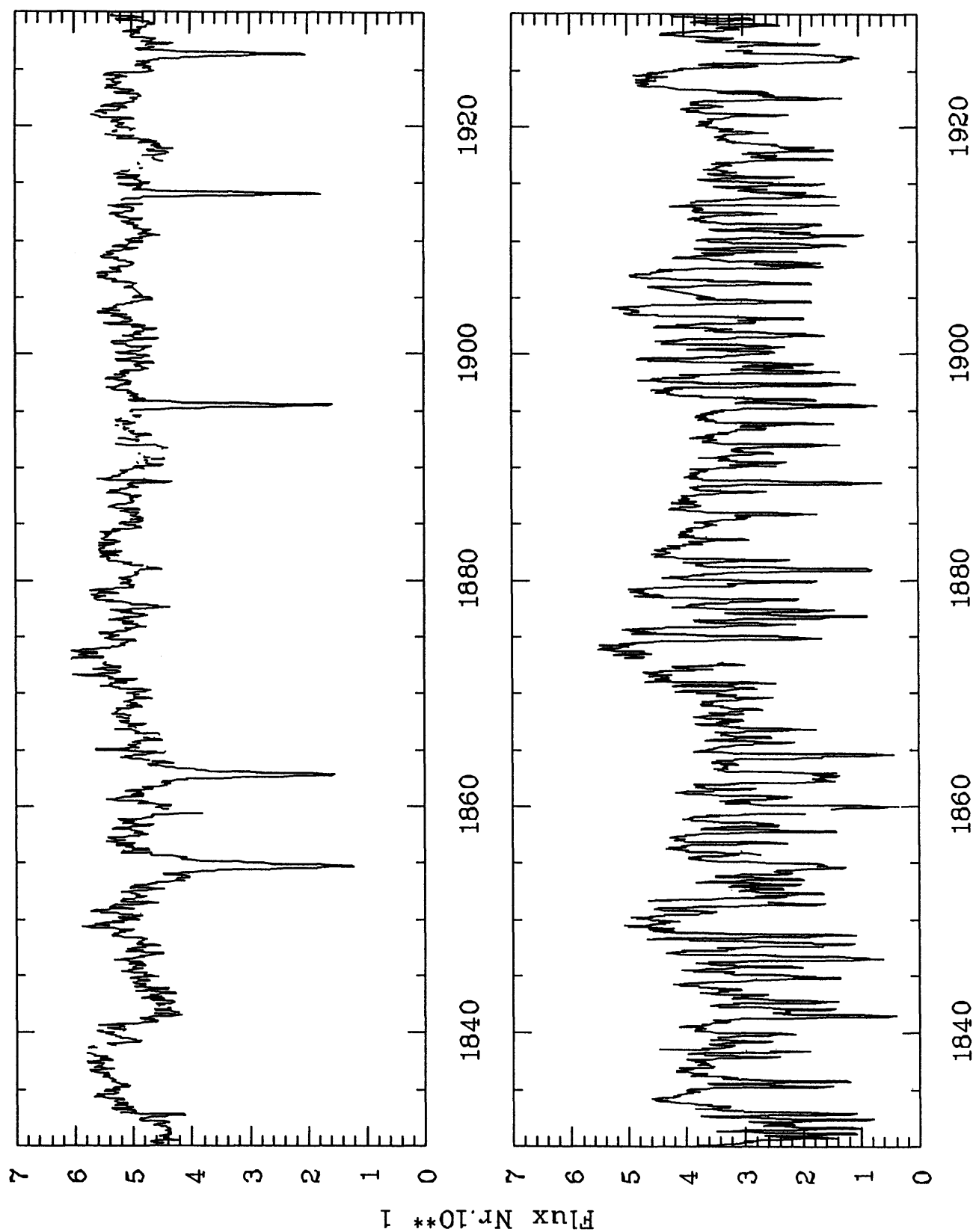


Be phase (top) IUE 3 37197 L 89.09.27 Q=0.97
 Be shell phase IUE 3 05987 L 79.07.29 Q=0.60

HD23862

B8V:e shell

vsini 320

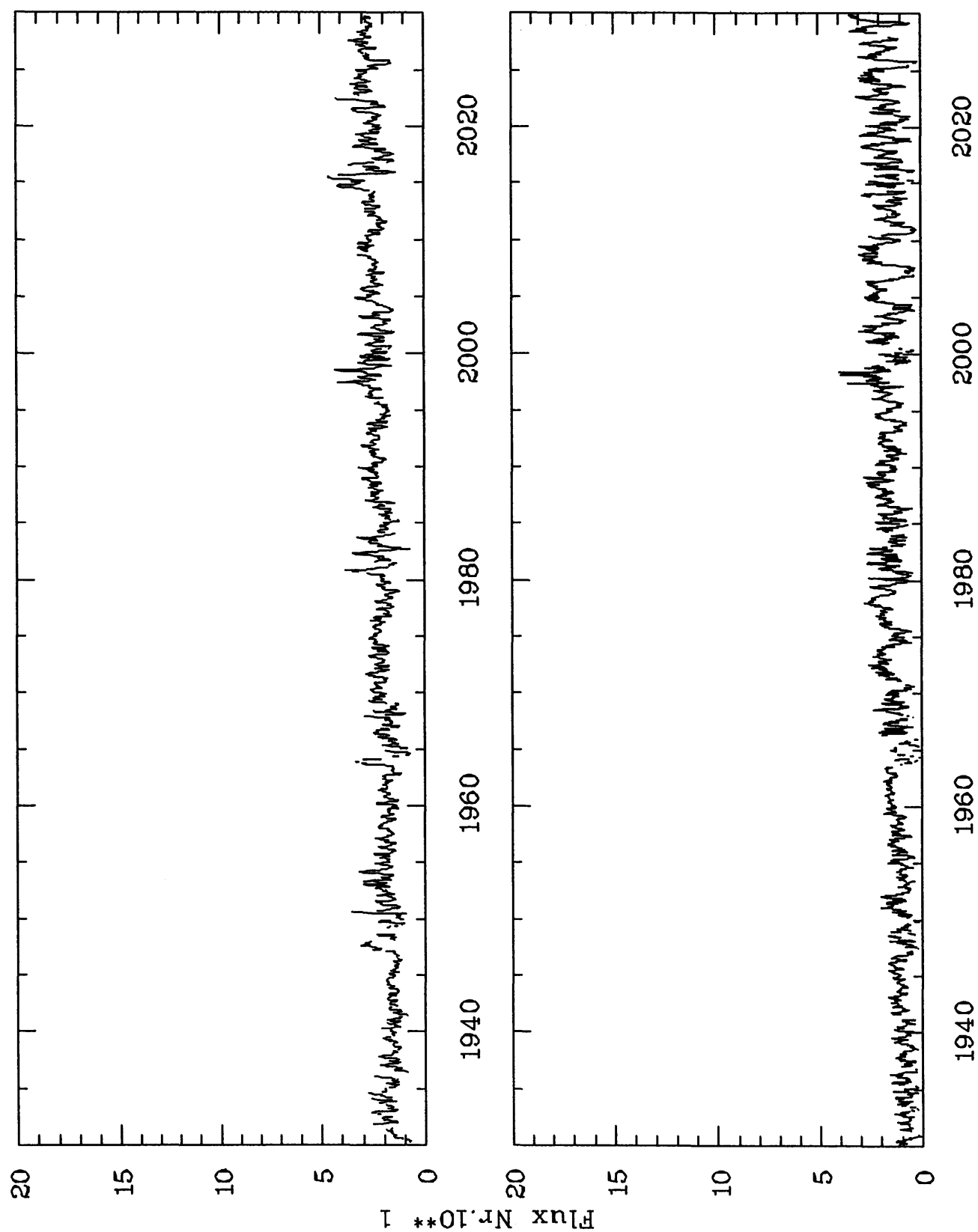


Be phase (top) IUE 3 37197 L 89.09.27 Q=0.95
 Be shell phase IUE 3 05987 L 79.07.29 Q=0.44

HD23862

B8V:e shell

vsini 320

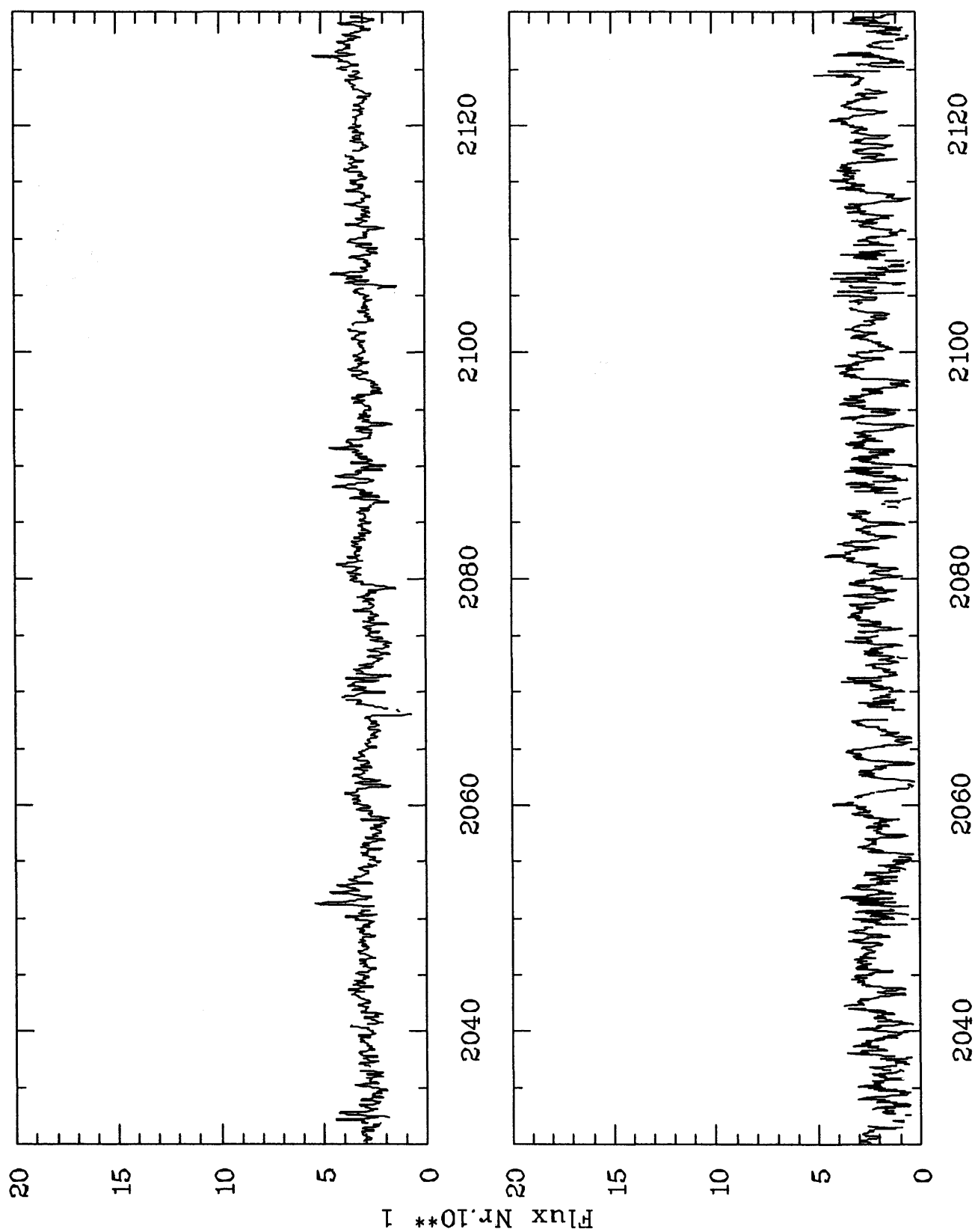


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.94
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.92

HD23862

B8V:e shell

vsini 320

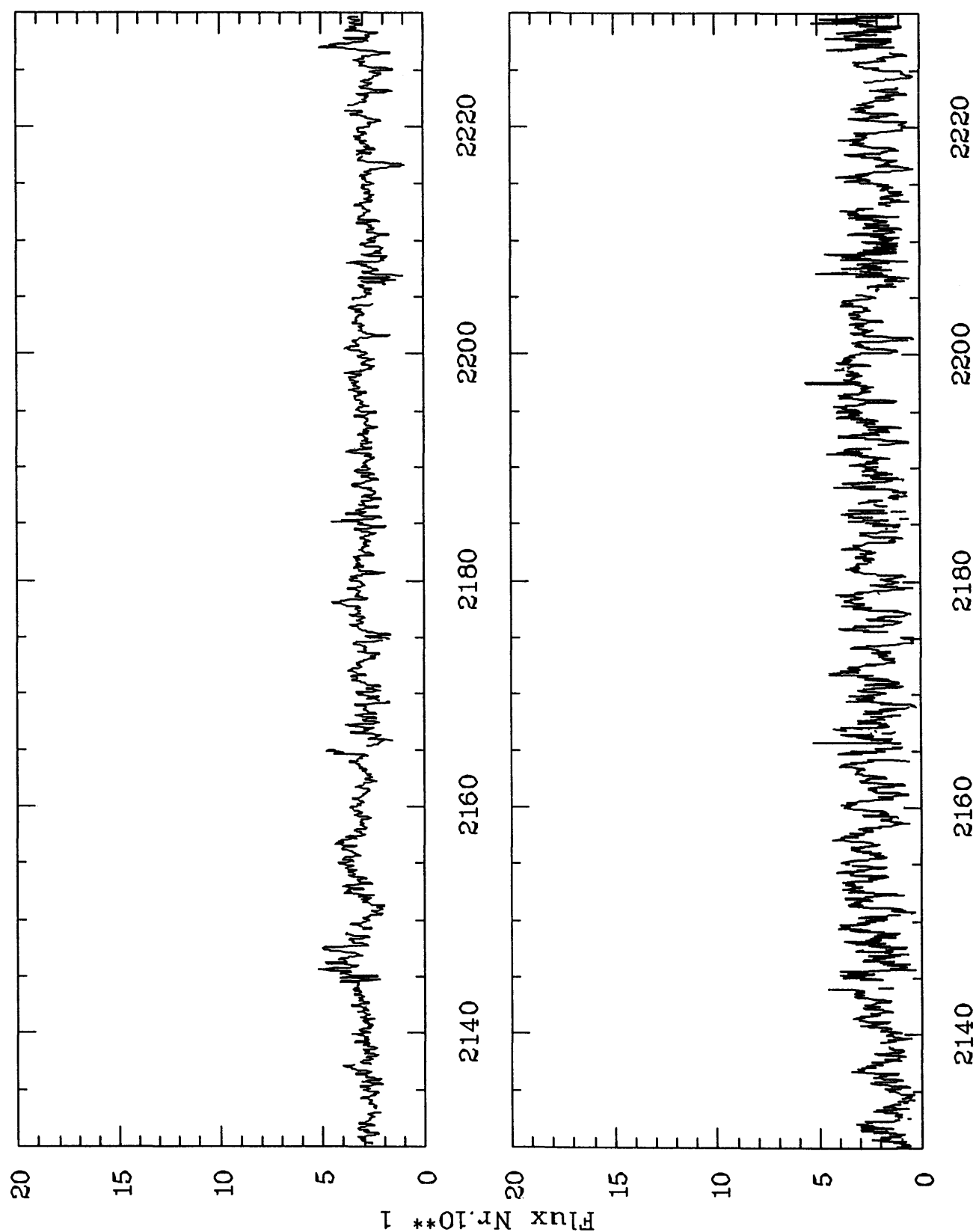


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.92

HD23862

B8V:e shell

vsini 320

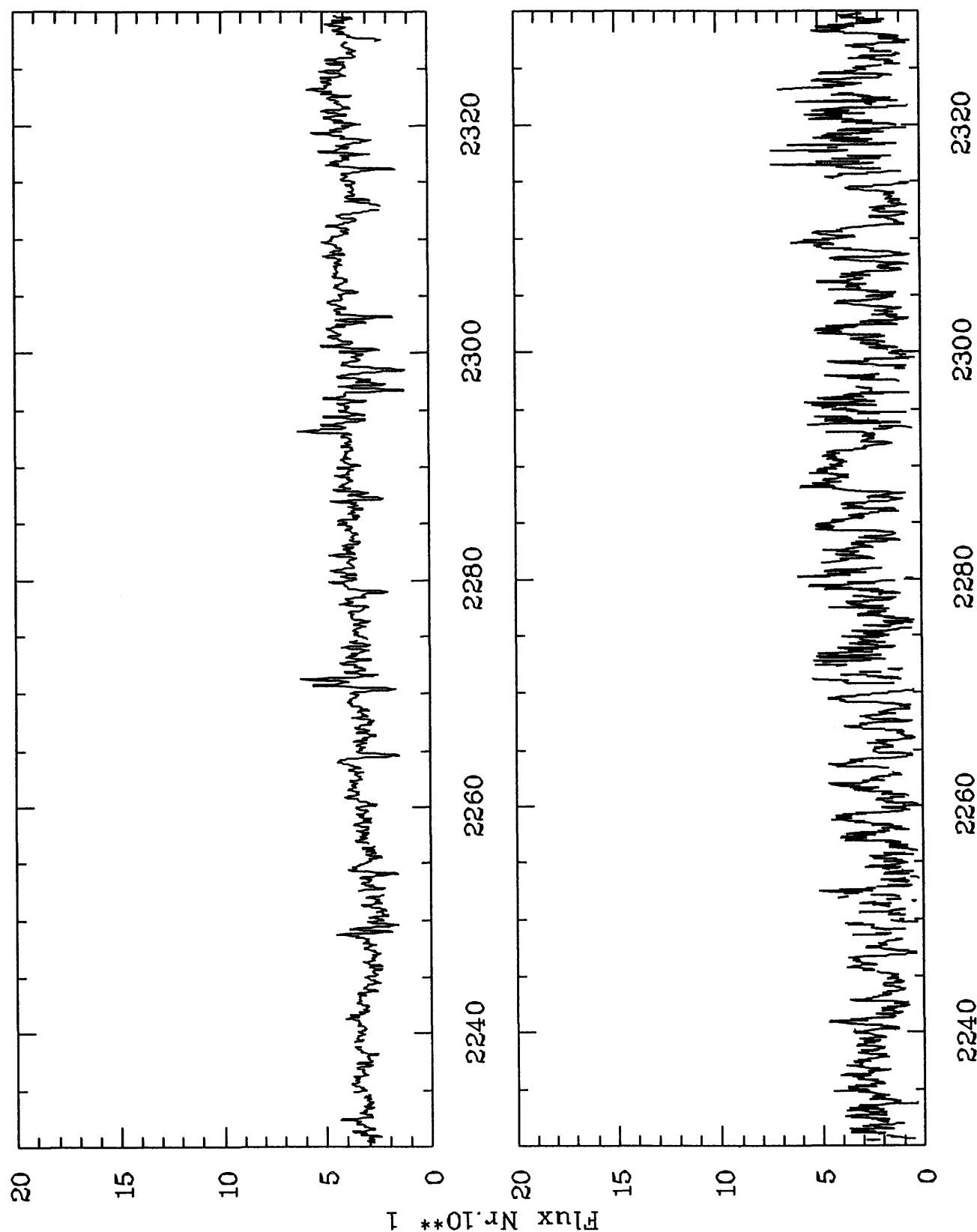


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.93

HD23862

B8V:e shell

vsini 320

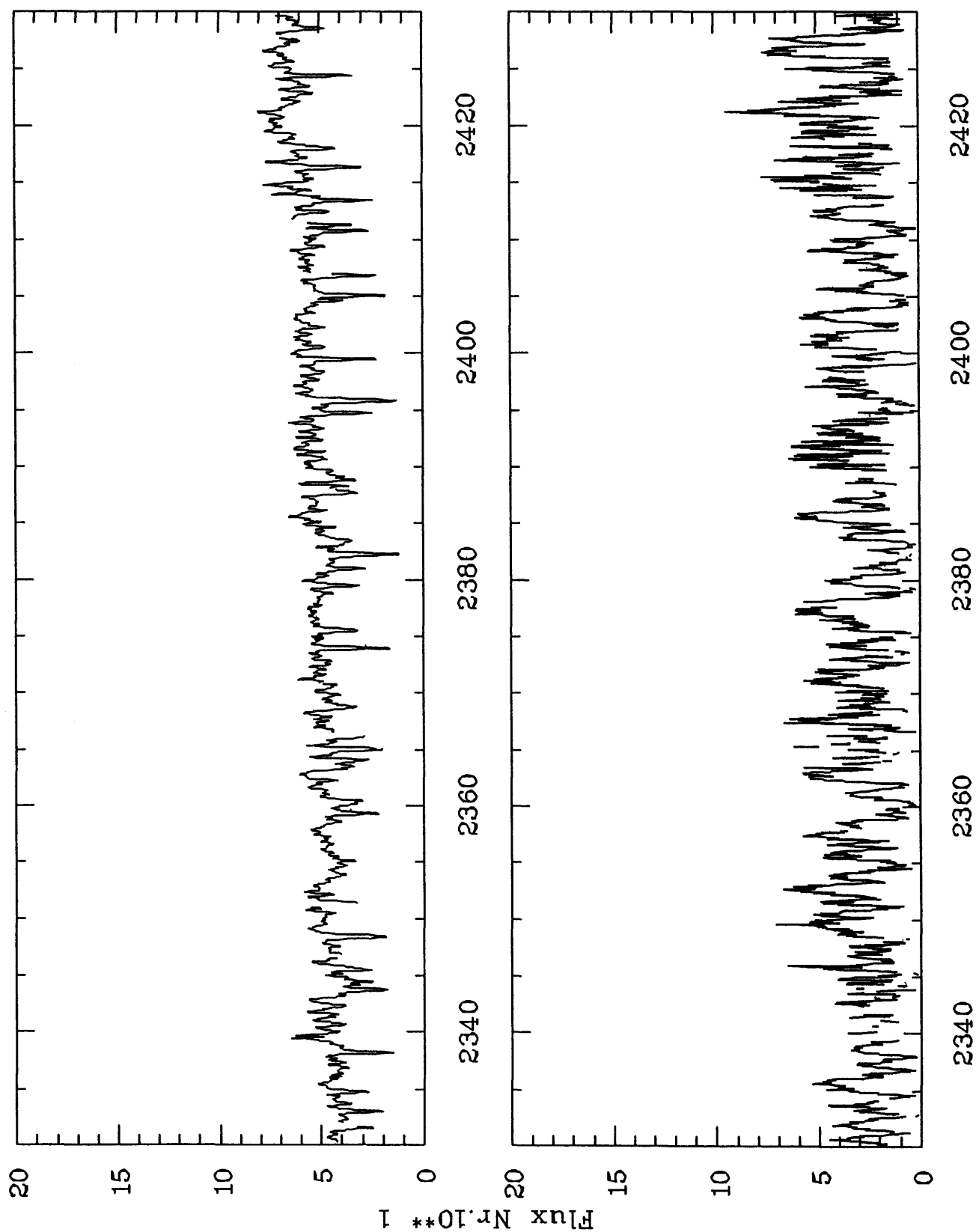


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.90

HD23862

B8V:e shell

vsini 320

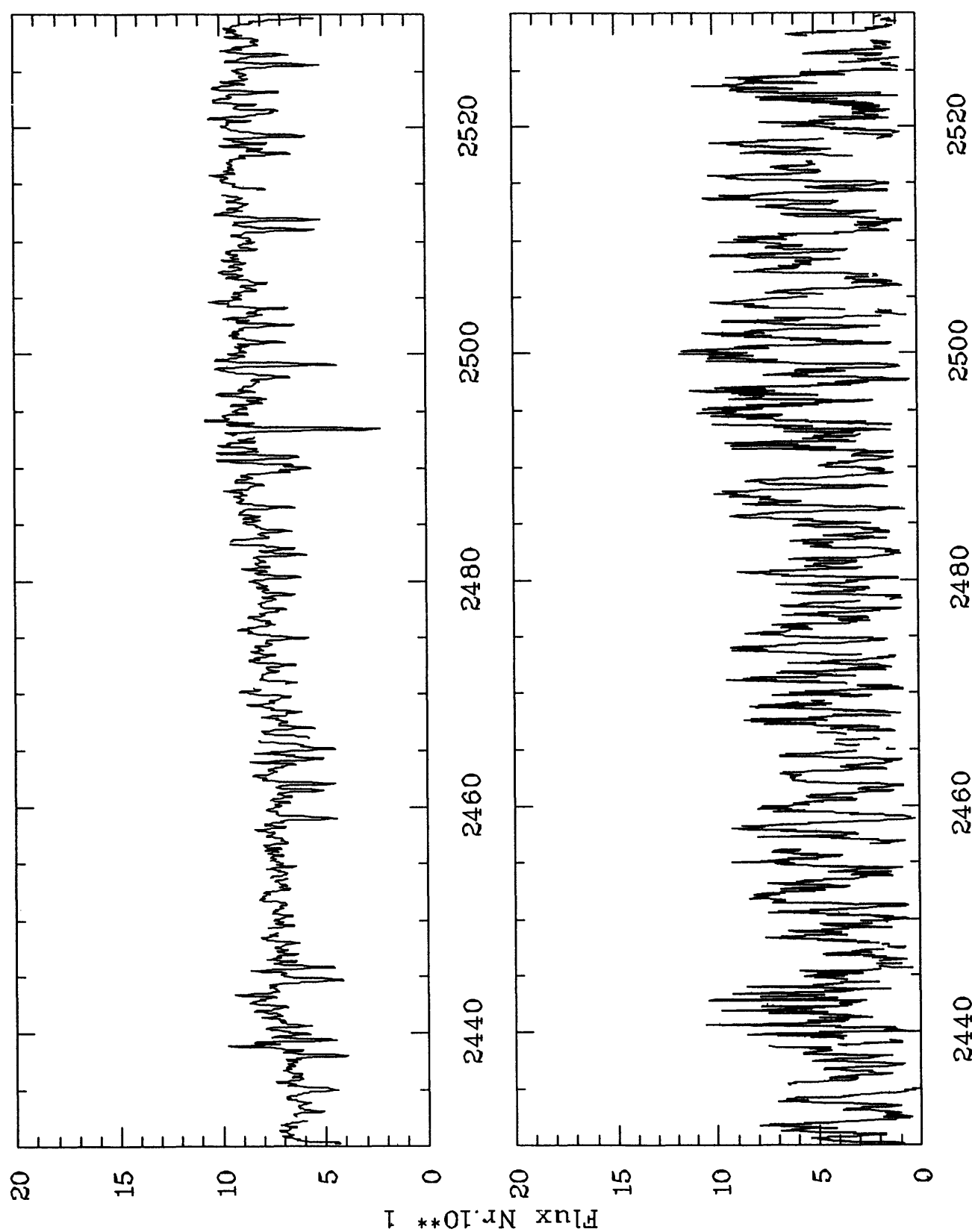


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.89

HD23862

B8V:e shell

vsini 320

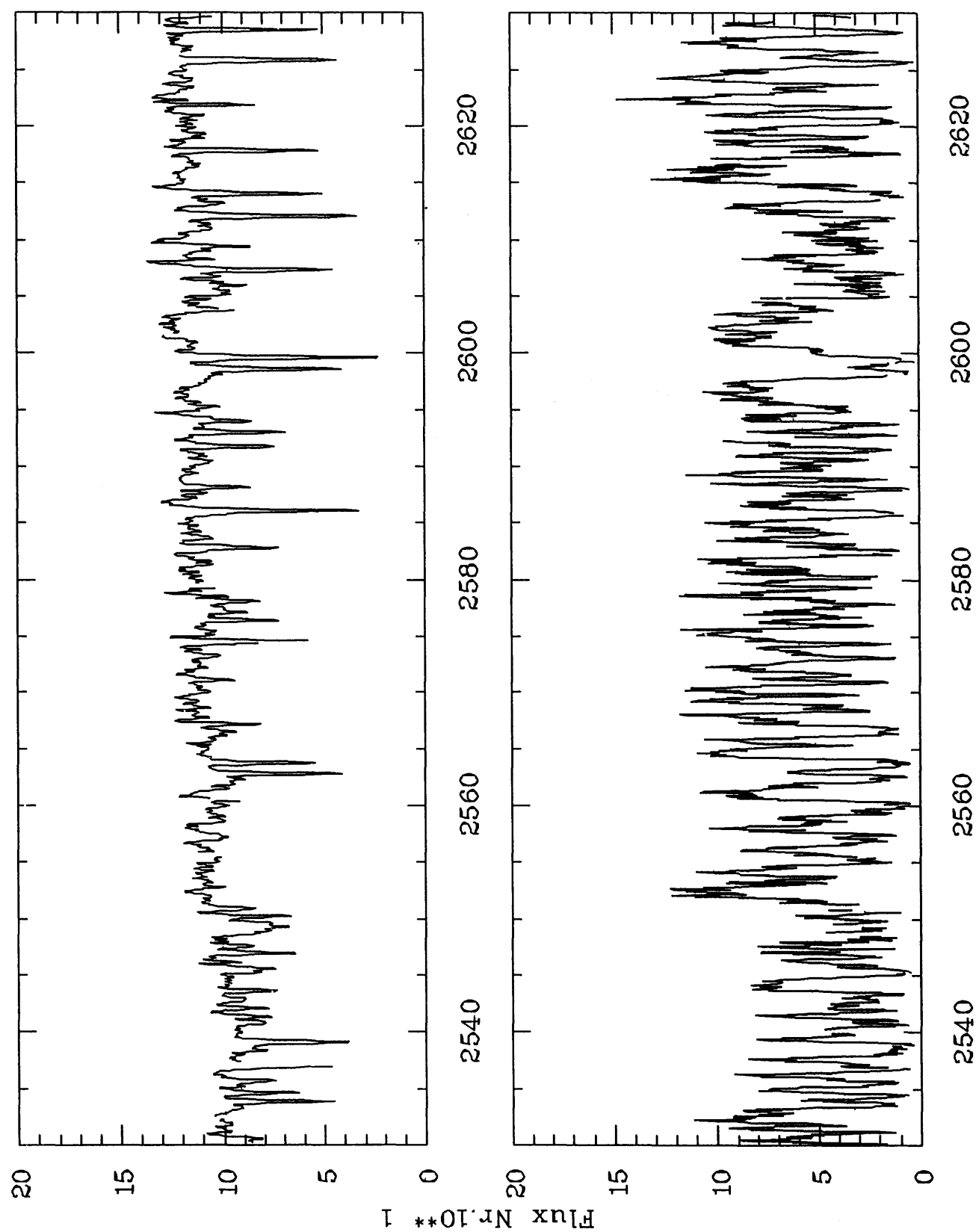


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.94

HD23862

B8V:e shell

vsini 320

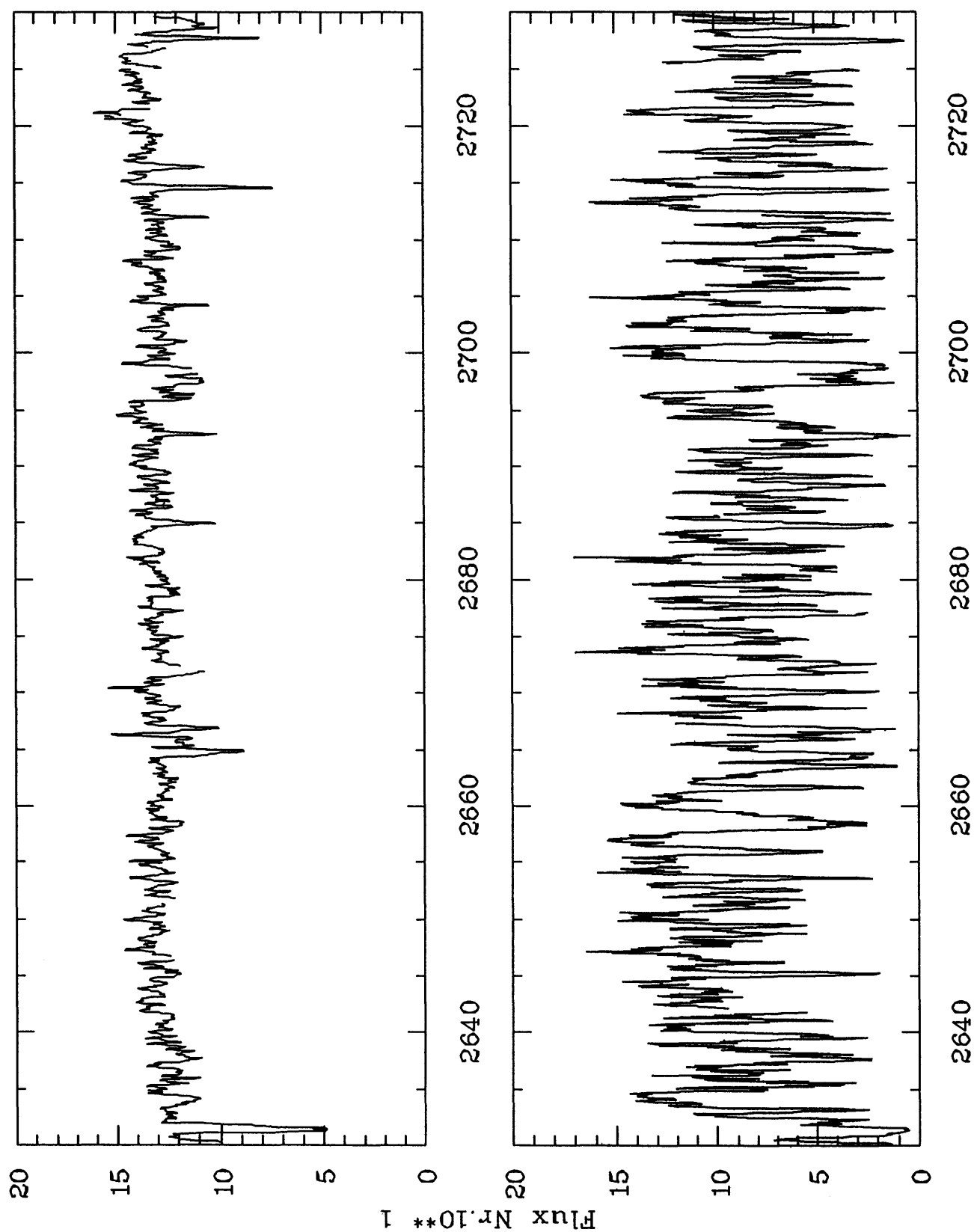


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.96

HD23862

B8V:e shell

vsini 320

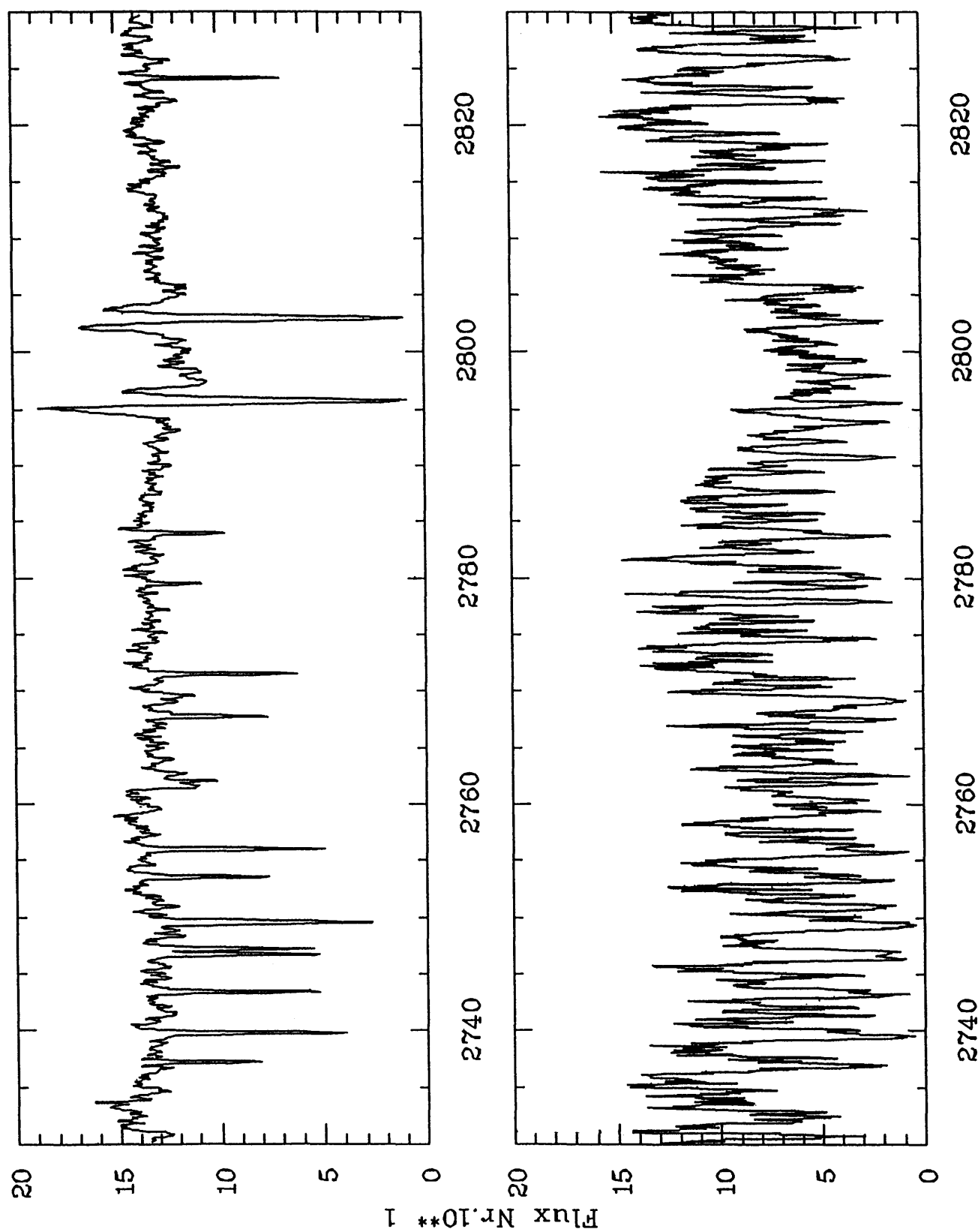


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.98

HD23862

B8V:e shell

vsini 320

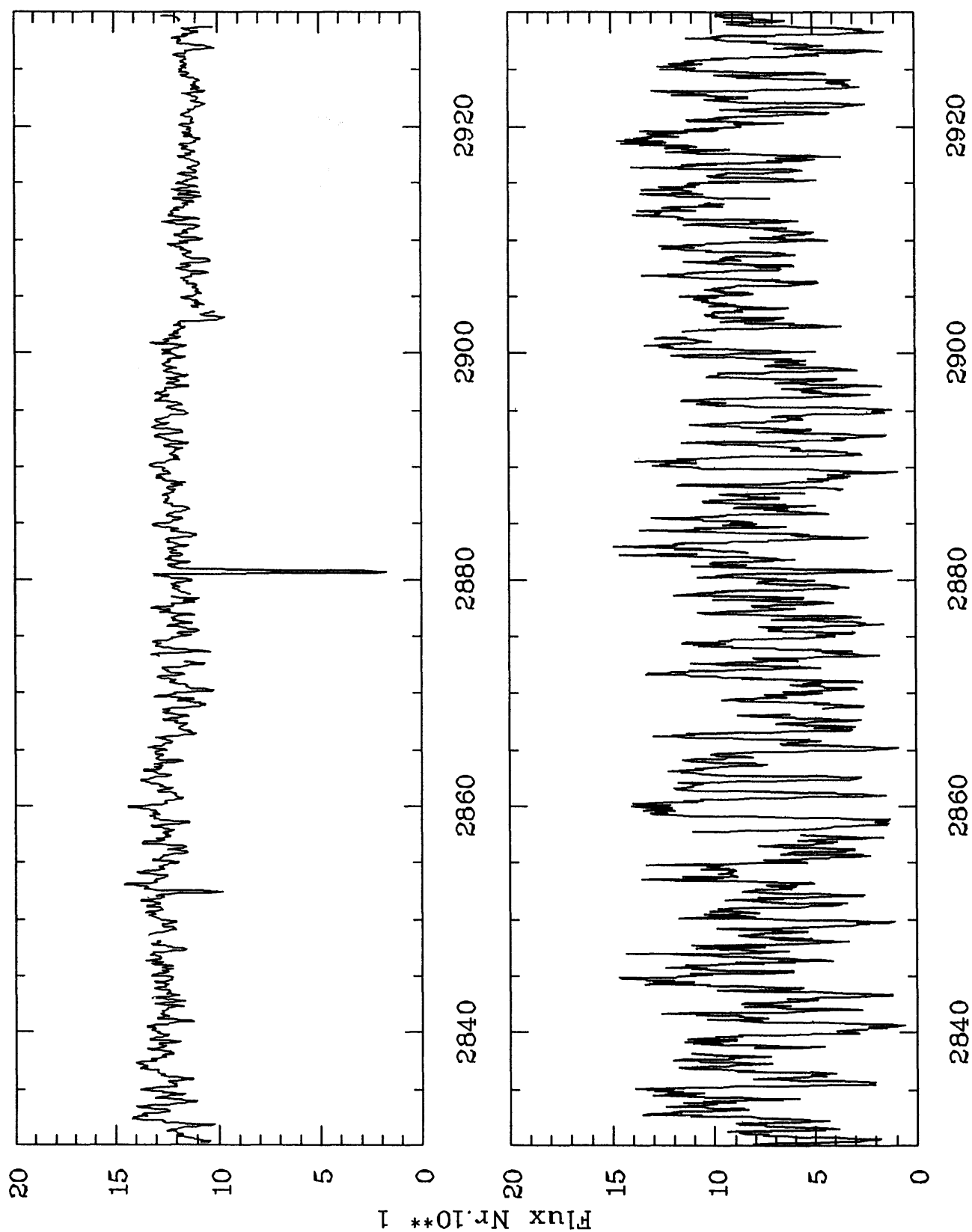


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.93
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.98

HD23862

B8V:e shell

vsini 320

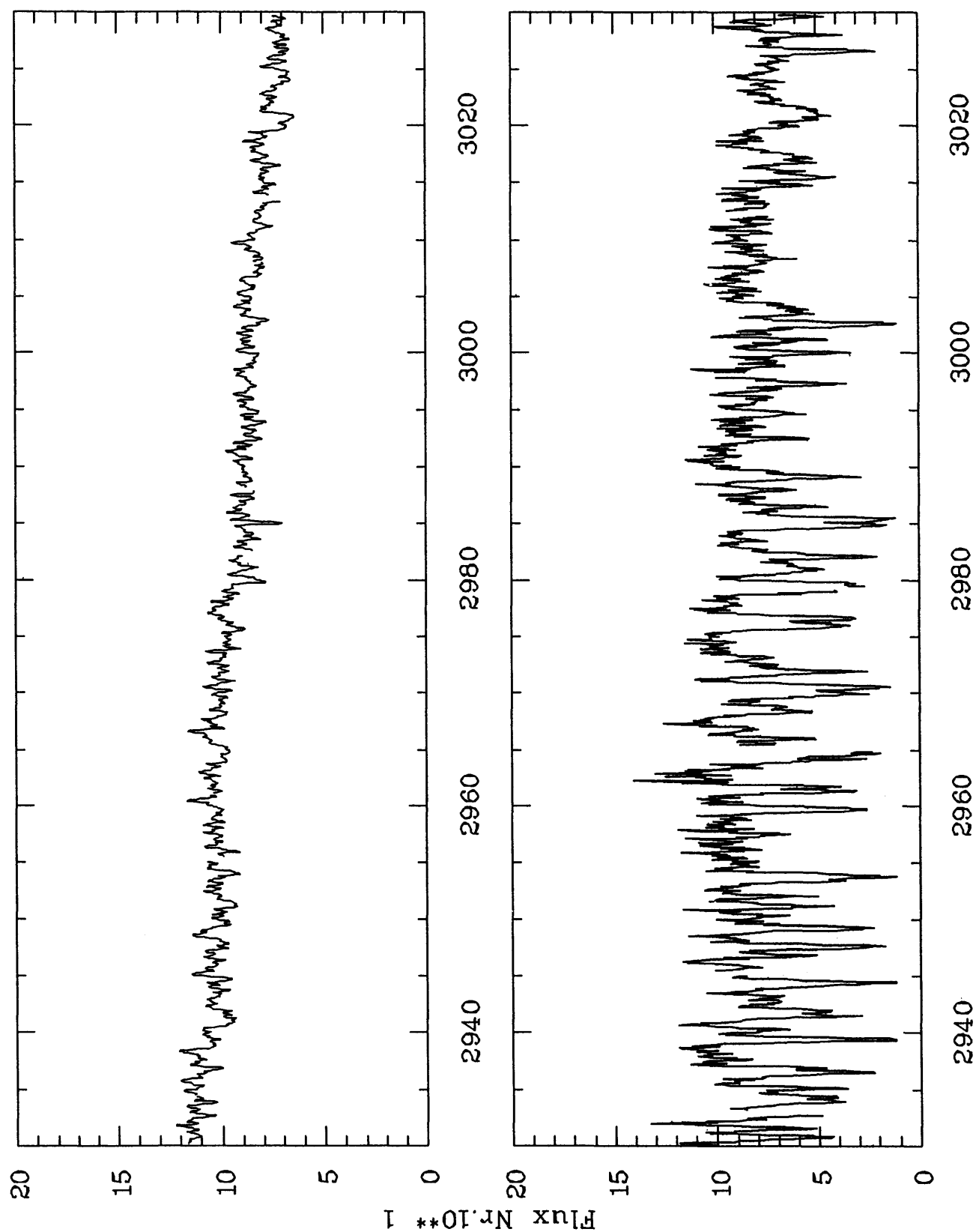


Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.98

HD23862

B8V:e shell

vsini 320



Be phase (top) IUE 1 16443 L 89.09.27 Q=0.98
 Be shell phase IUE 2 05204 L 79.09.29 Q=0.97



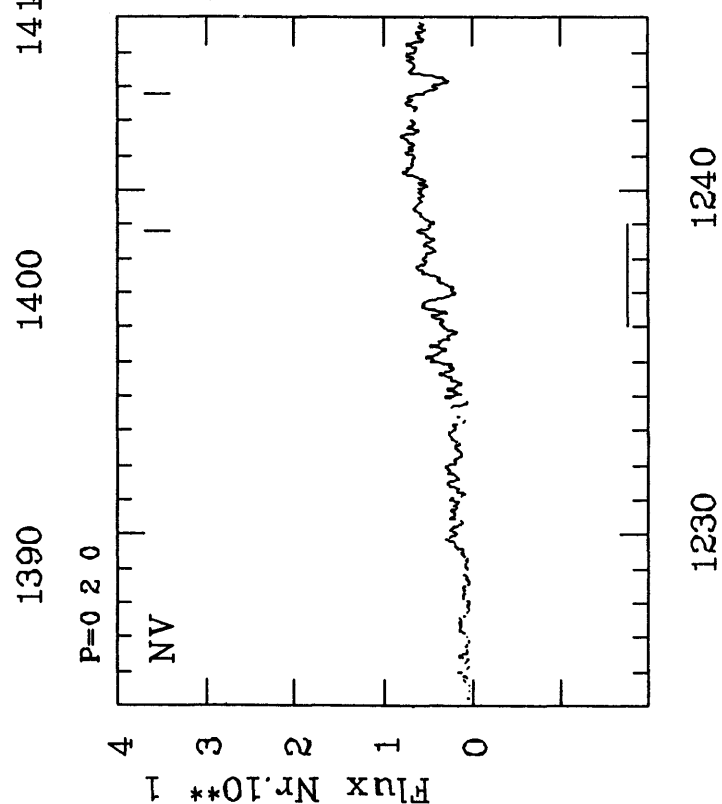
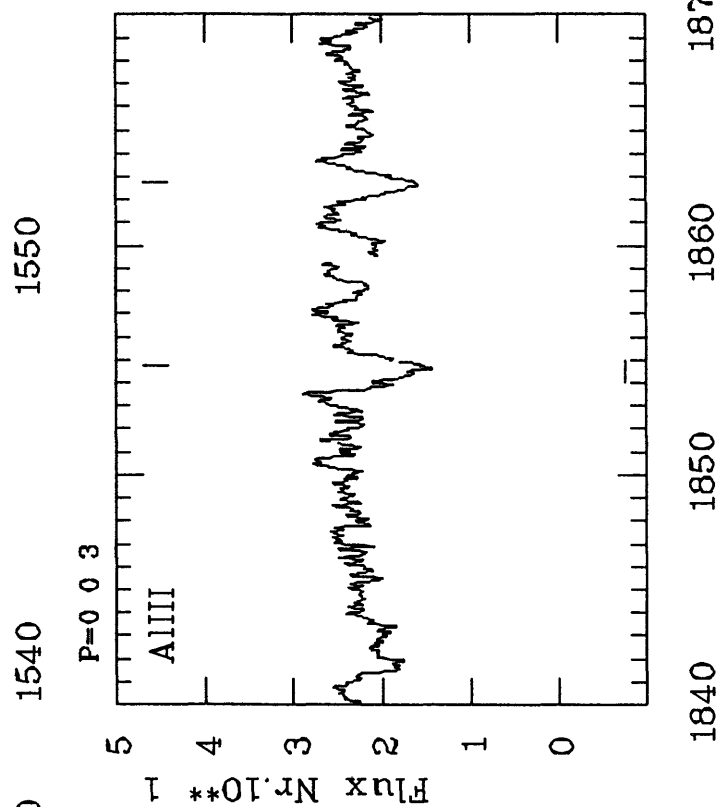
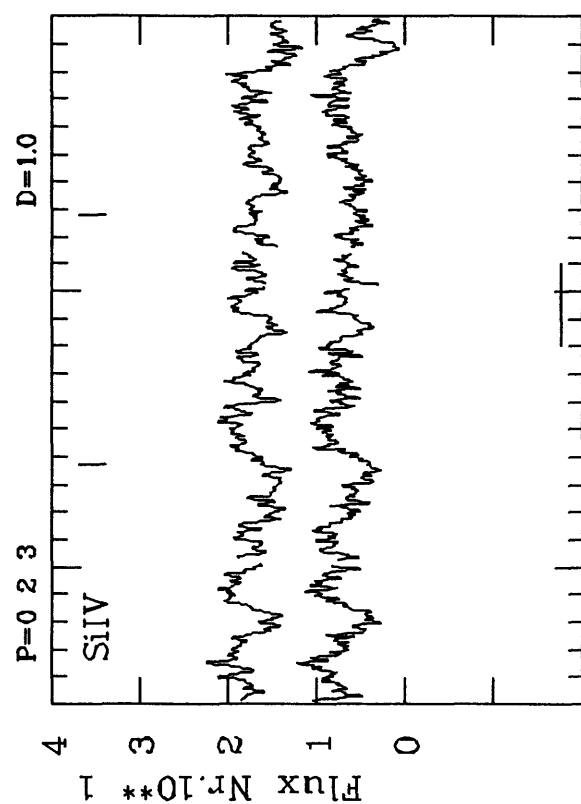
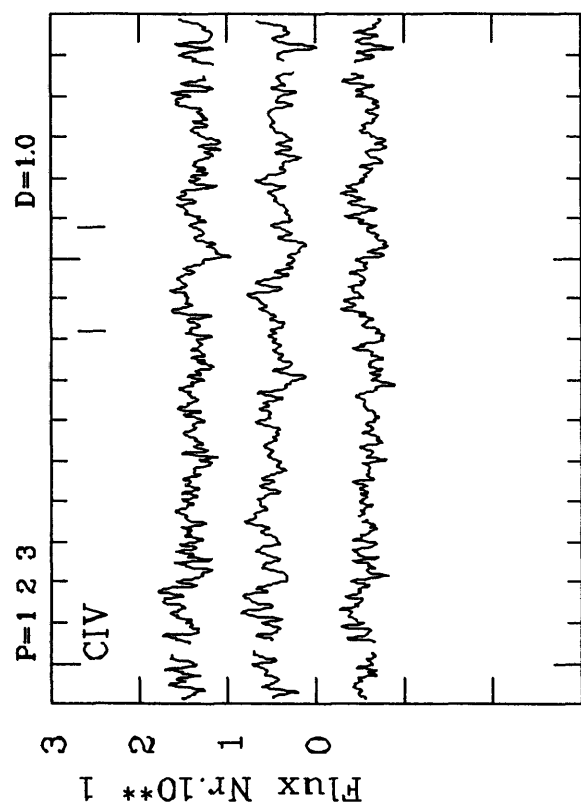
Part II

Selected regions of far UV and optical spectra
for 166 Be stars

HD 144

B8.5IVe

vsini 120



IUE 3 15936 L 82.01.03 - 3 20433 L 83.07.10 - 3 29402 L 86.10.08

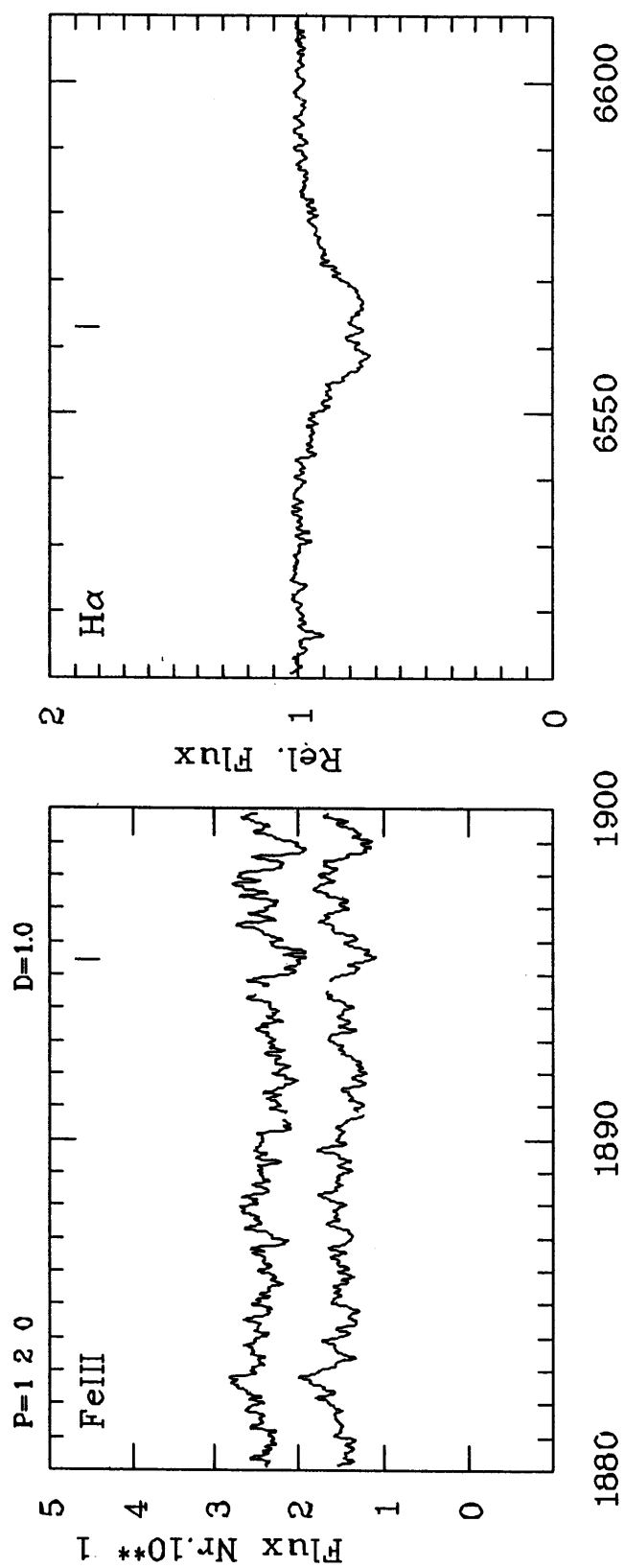
OHP R GA7856

87.11.29

HD 144

B8.5IVe

vsini 120



IUE 3 15936 L 82.01.03 - 3 20433 L 83.07.10 - 3 29402 L 86.10.08

-

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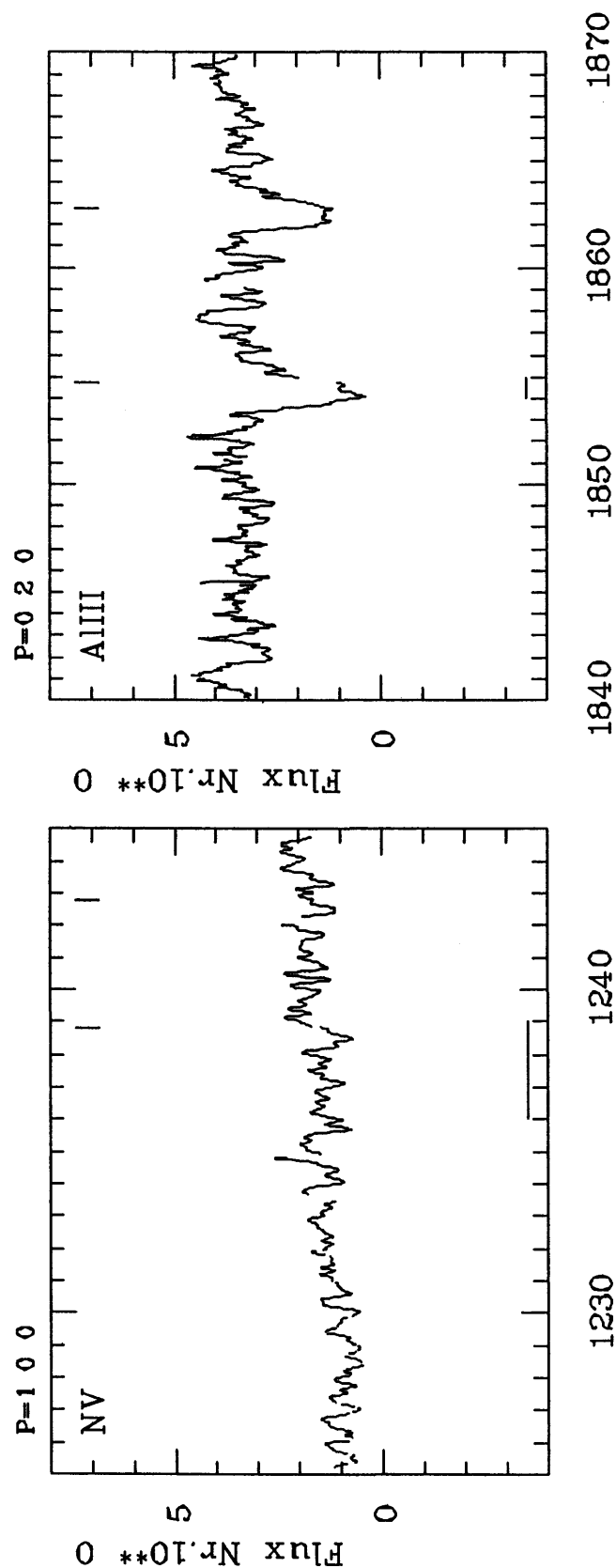
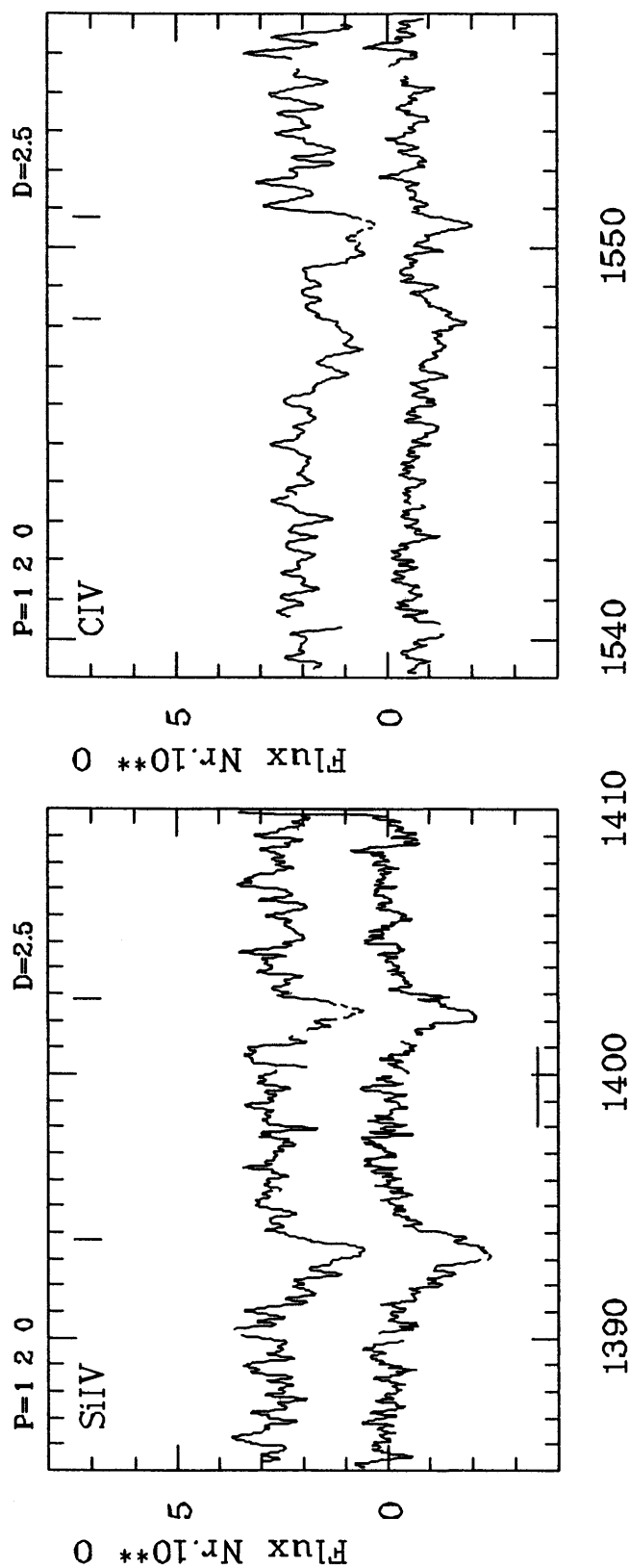
OHP R GA7856

87.11.29

HD 698

B5IIe

vsini 50

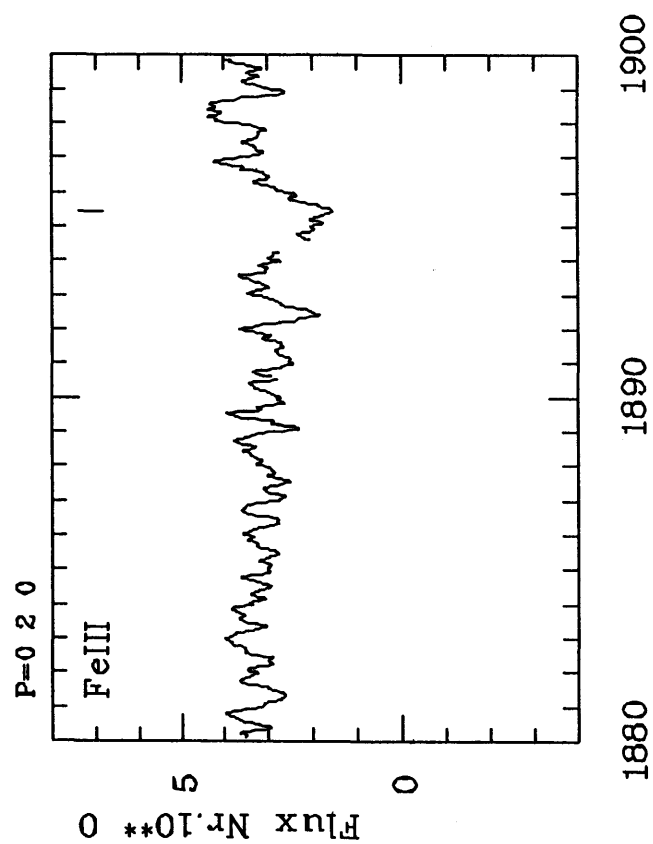
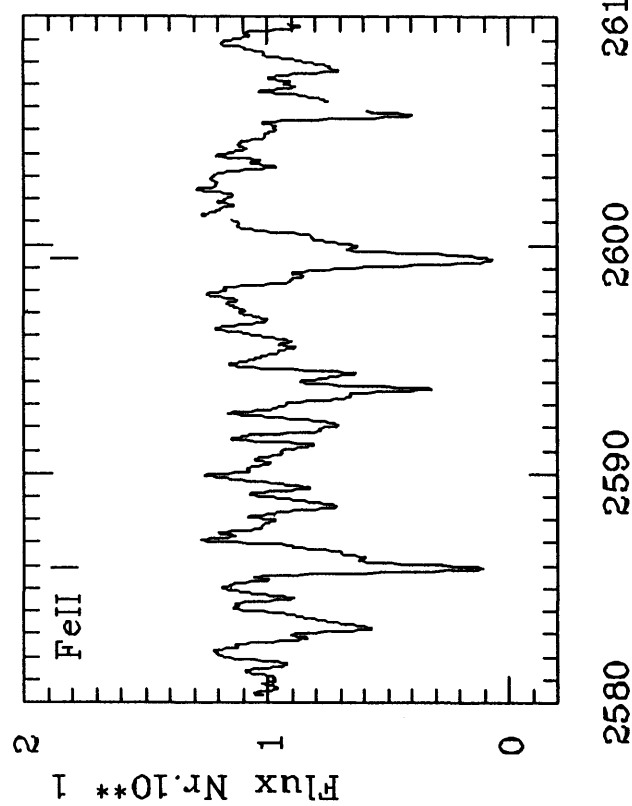
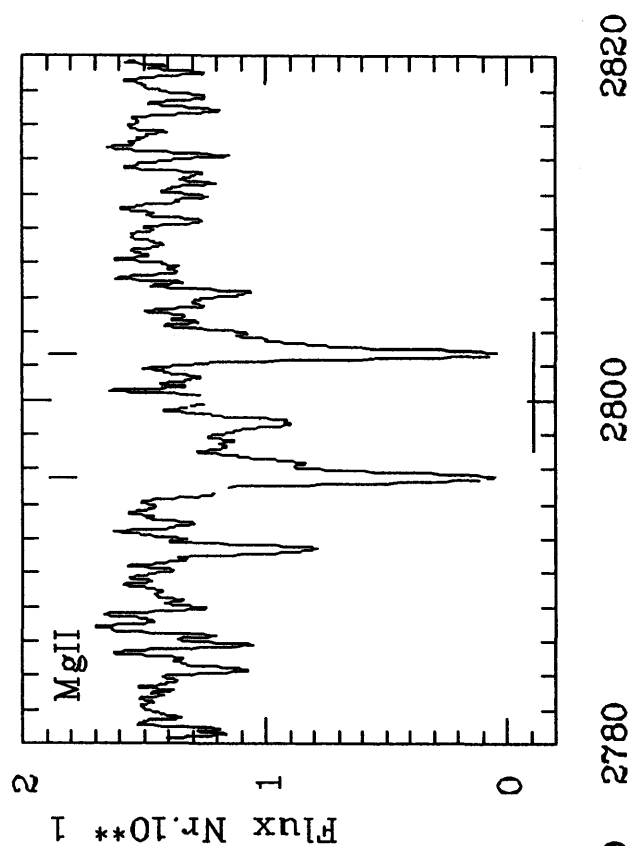


IUE 3 26308 L 85.06.29 - 3 30287 L 87.02.09
 IUE 1 10101 L 87.02.09

HD 698

B5Ile

vsini 50

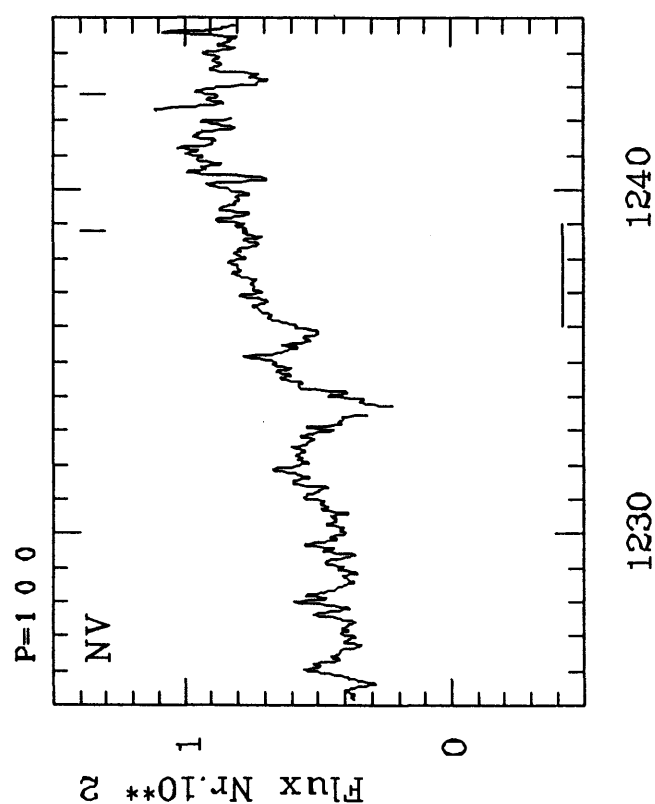
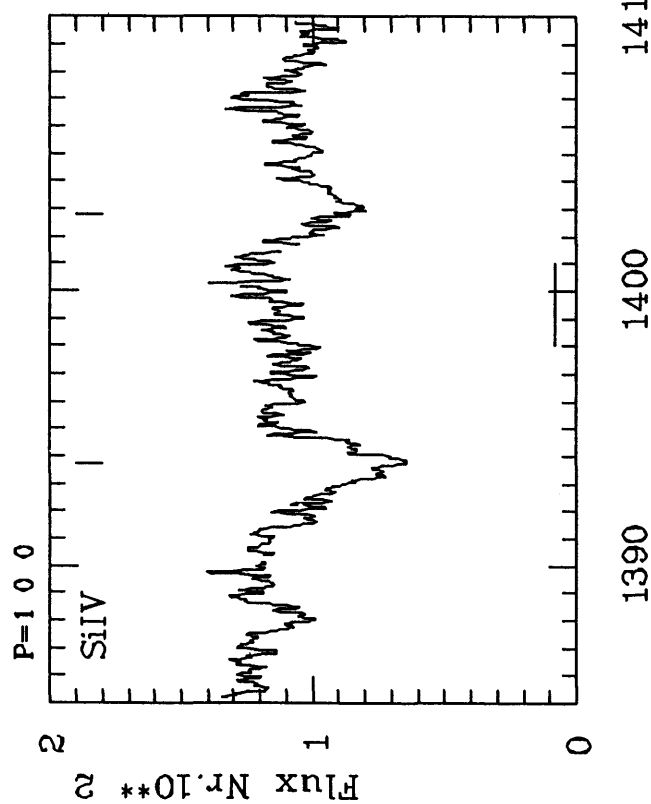
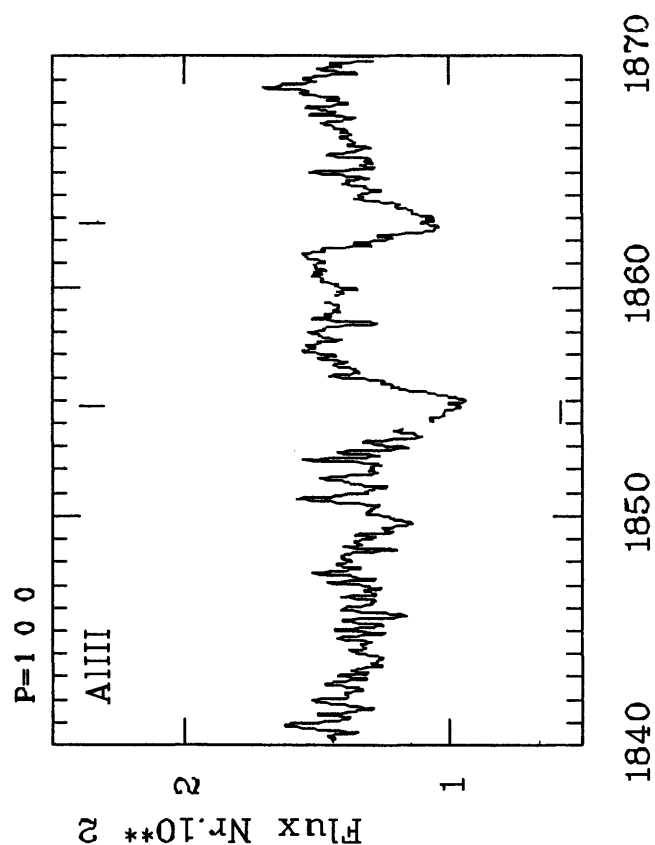
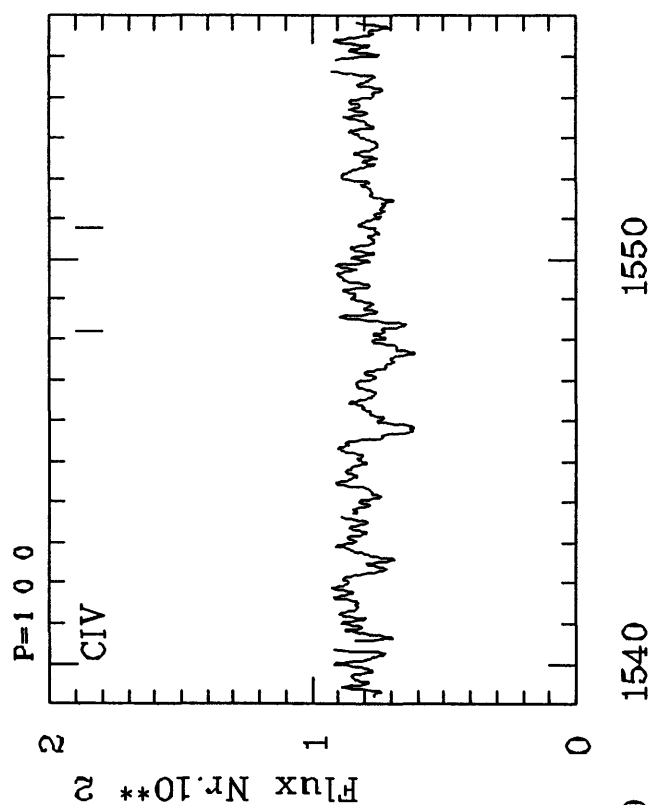


IUE 3 26308 L 85.06.29 - 3 30287 L 87.02.09
 IUE 1 10101 L 87.02.09

HD 4180

B5IVe

vsini 220



IUE 3 20436 L 83.07.10

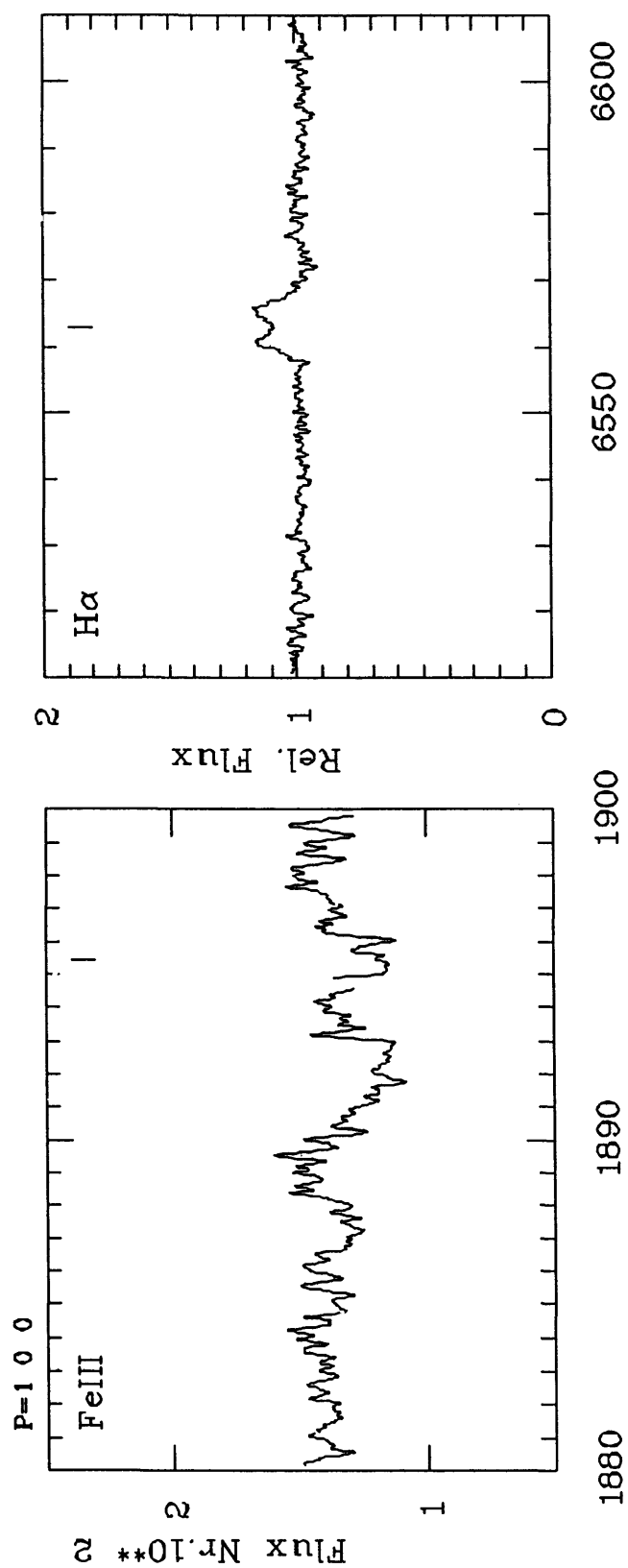
OHP R W6511

77.11.25

HD 4180

B5IVe

vsini 220



IUE 3 20436 L 83.07.10

-
-

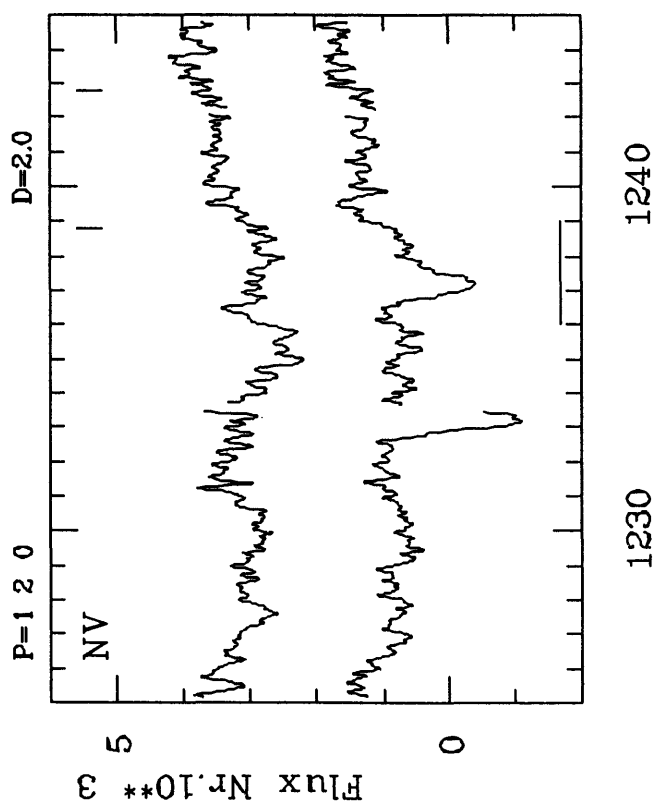
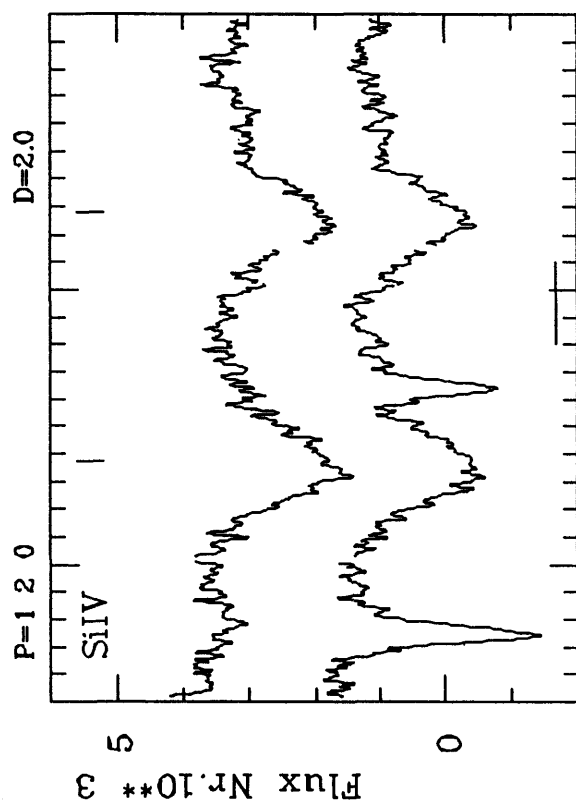
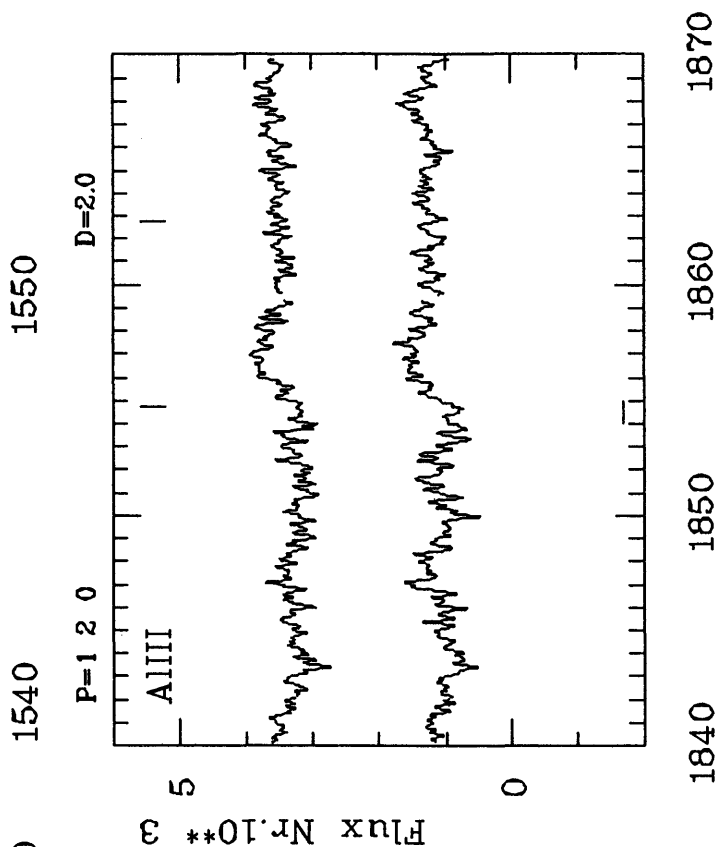
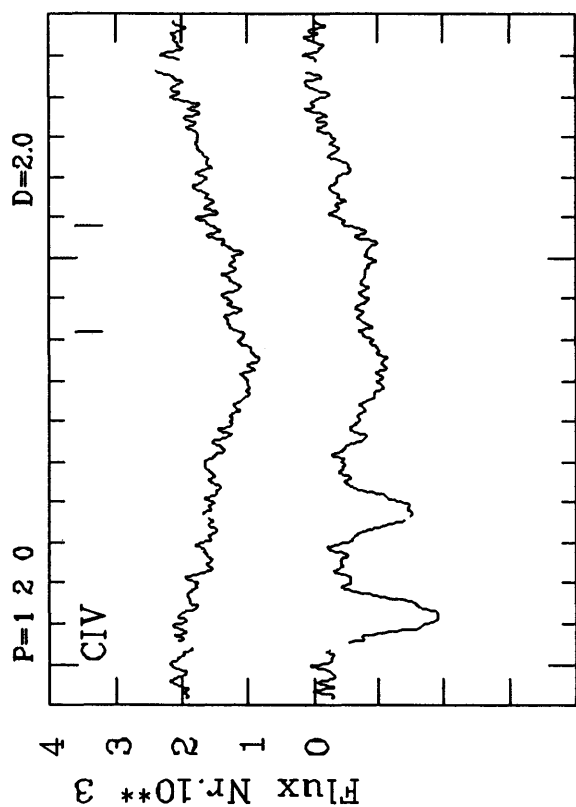
OHP R W6511

77.11.25

HD 5394

B0.5IVe

vsini 230



IUE 3 20312 L 83.06.25 - 3 29343 L 86.10.01

IUE 1 09223 L 86.10.01

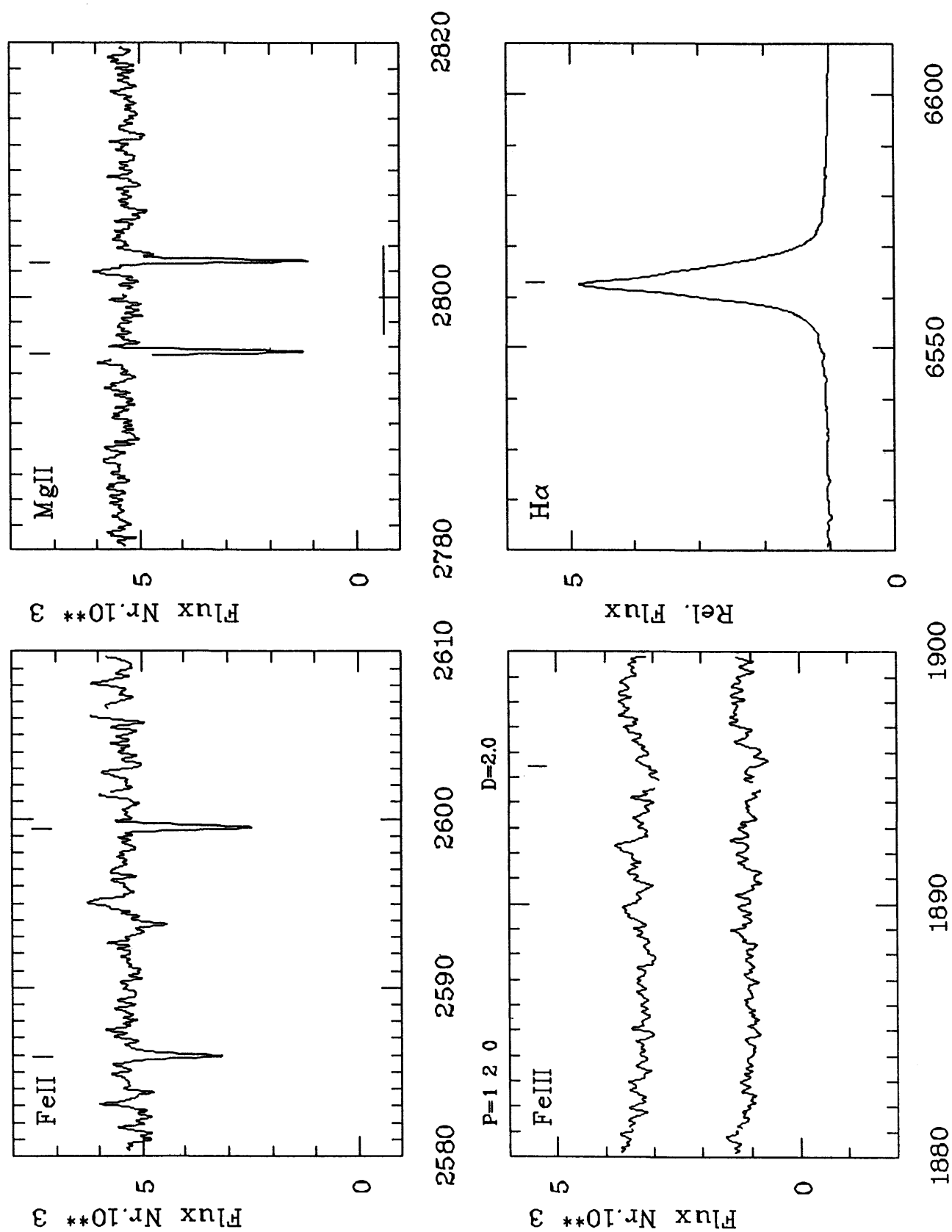
OHP R CCD4

87.12.01

HD 5394

B0.5IVe

vsini 230



IUE 3 20312 L 83.06.25 - 3 29343 L 86.10.01
 IUE 1 09223 L 86.10.01

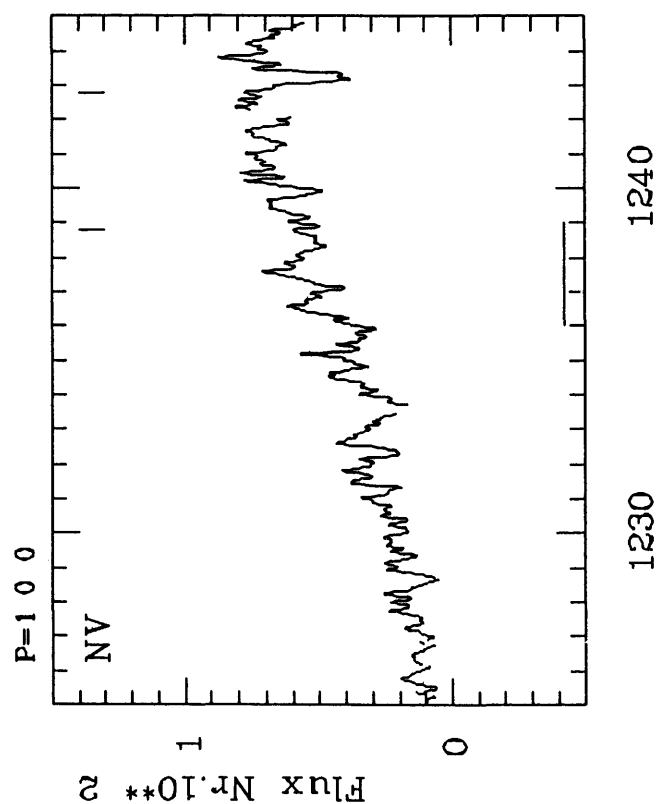
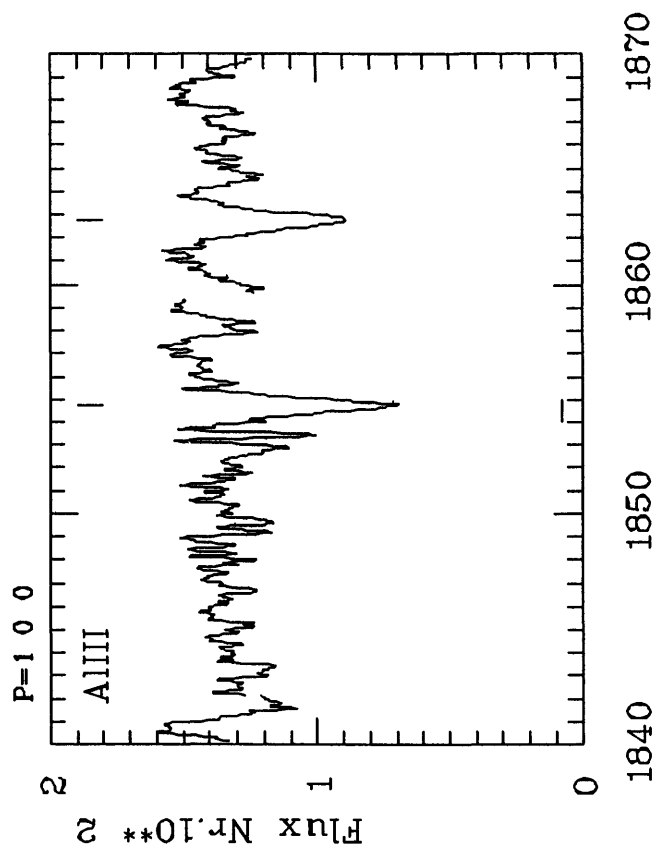
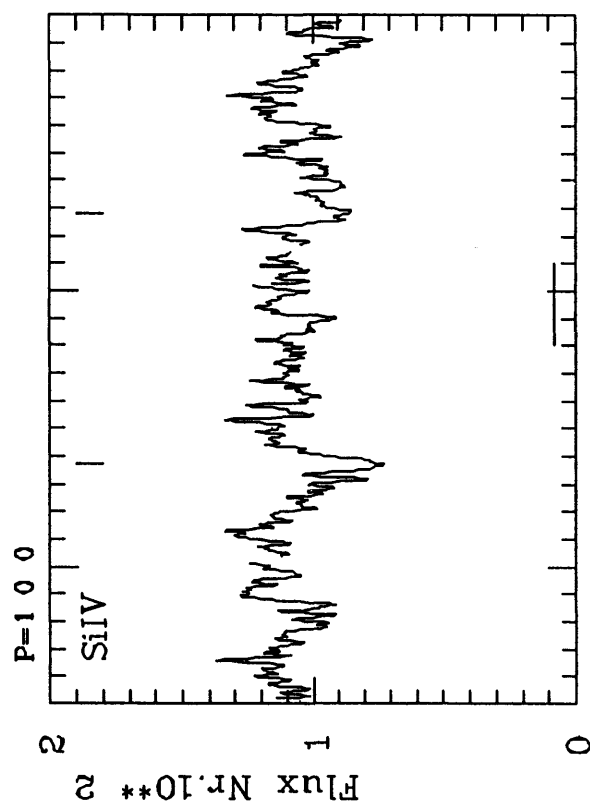
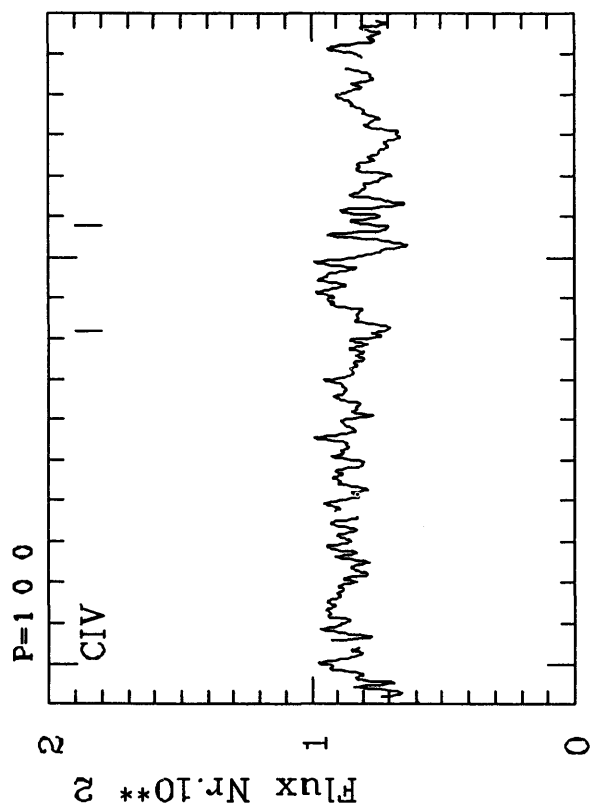
OHP R CCD4

87.12.01

HD 6811

B6.5IIIe

vsini 80



IUE 3 20437 L 83.07.10

IUE 2 09070 S 80.10.17

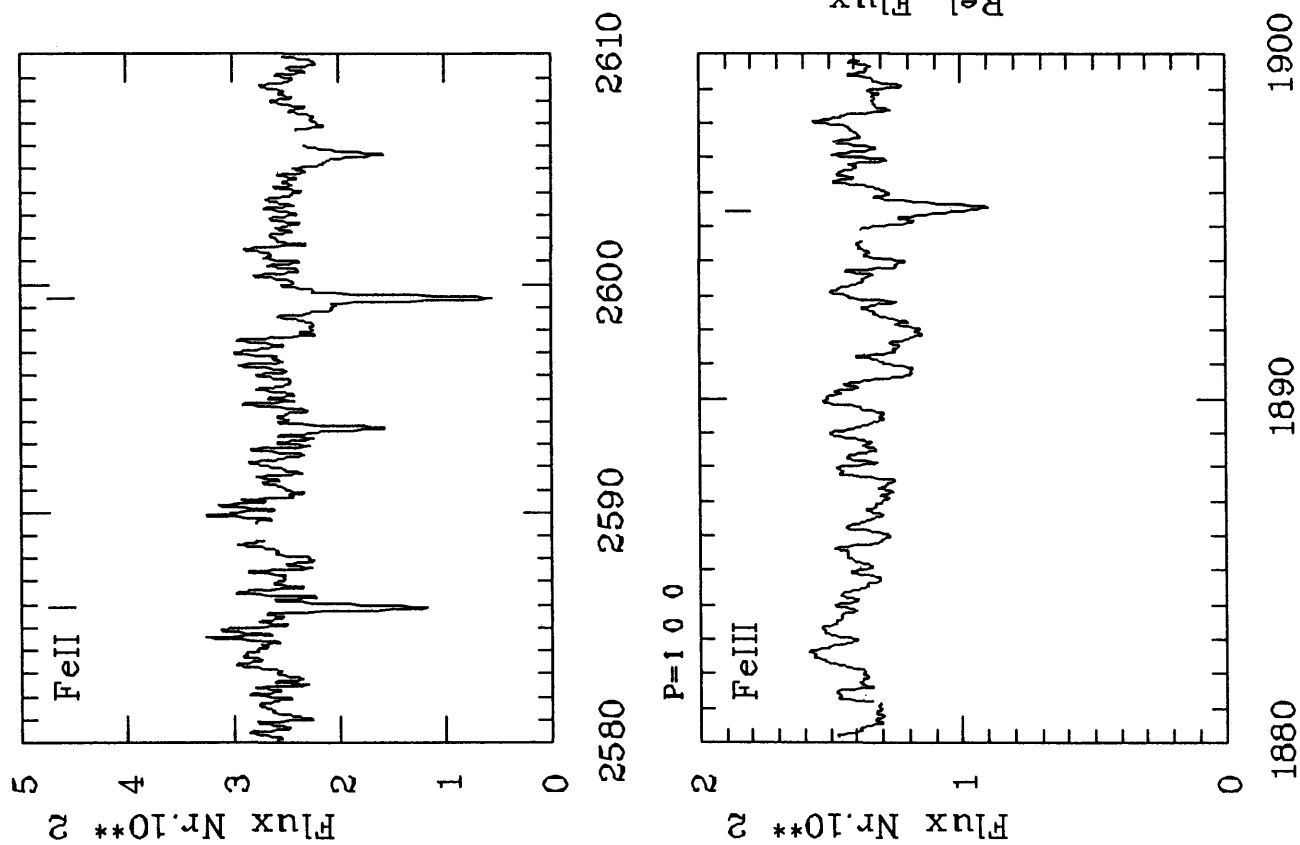
OHP R GA7844

87.11.28

HD 6811

B6.5IIIe

vsini 80



IUE 3 20437 L 83.07.10

IUE 2 09070 S 80.10.17

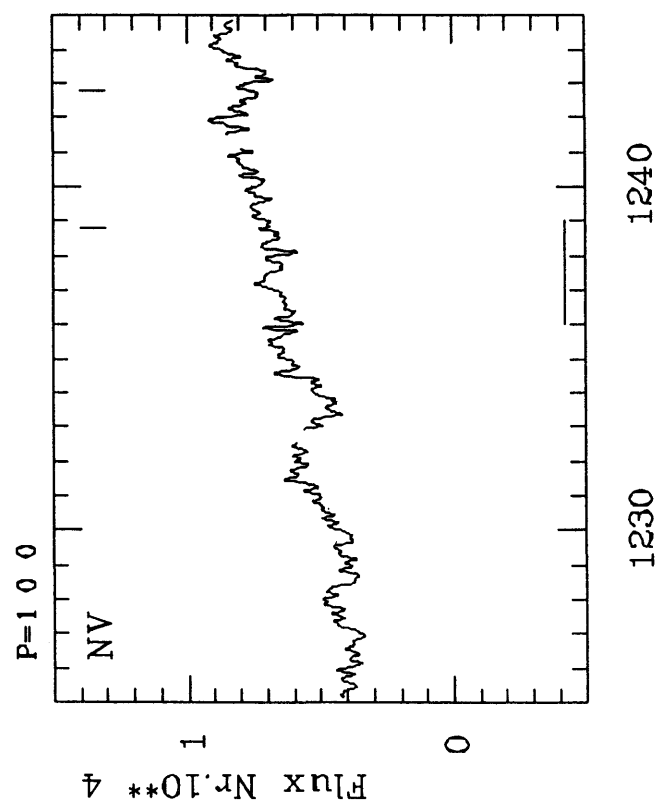
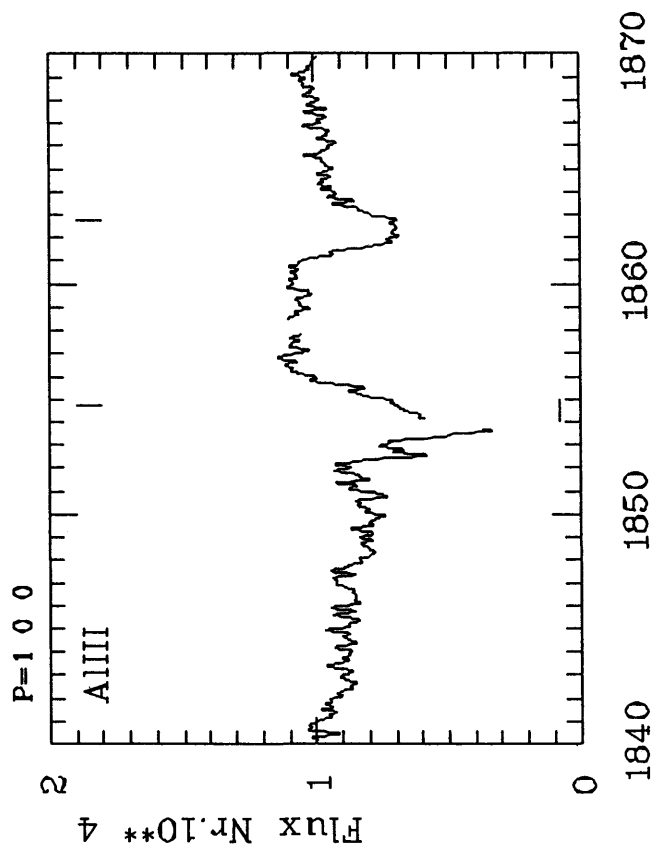
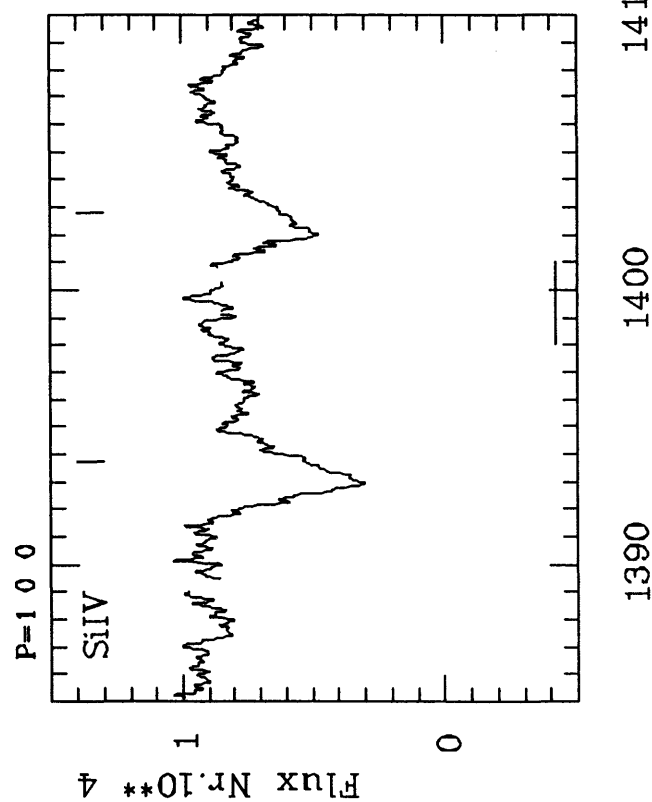
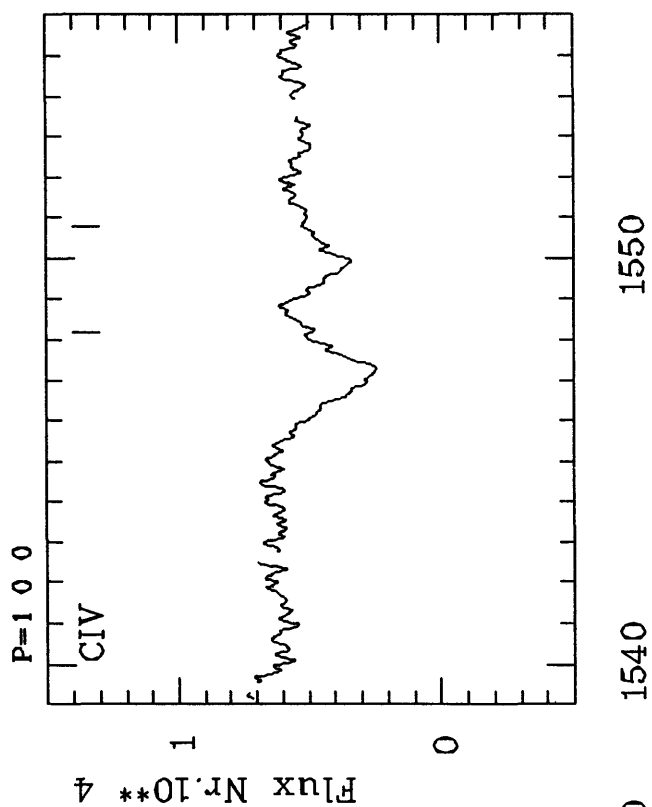
-

OHP R GA7844

87.11.28

HD 10144 B4Ve

vsini 225



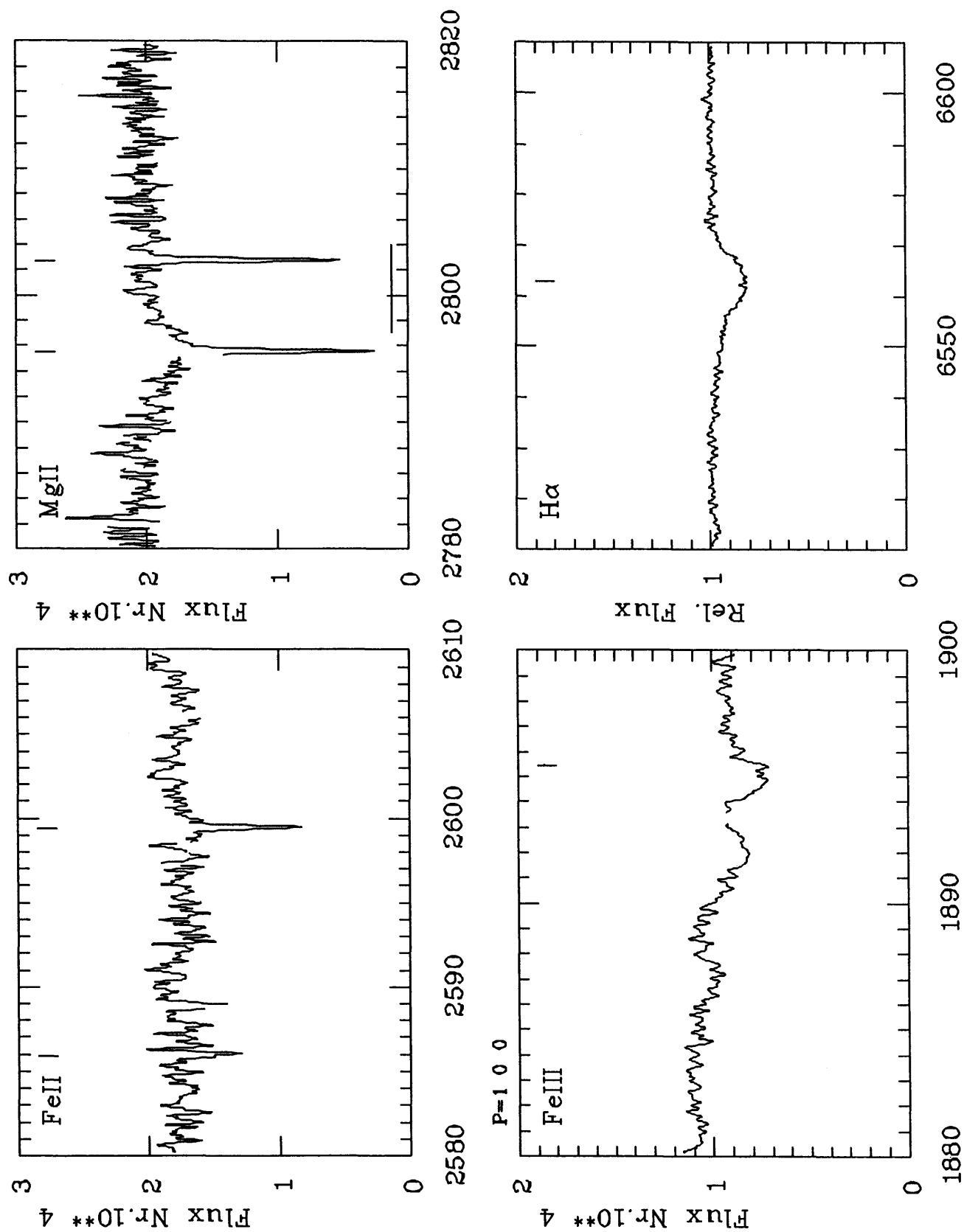
IUE 3 05914 S 79.07.23

IUE 2 16868 S 83.09.24

ESO R G13820 88.10.24

HD 10144 B4Ve

vsini 225



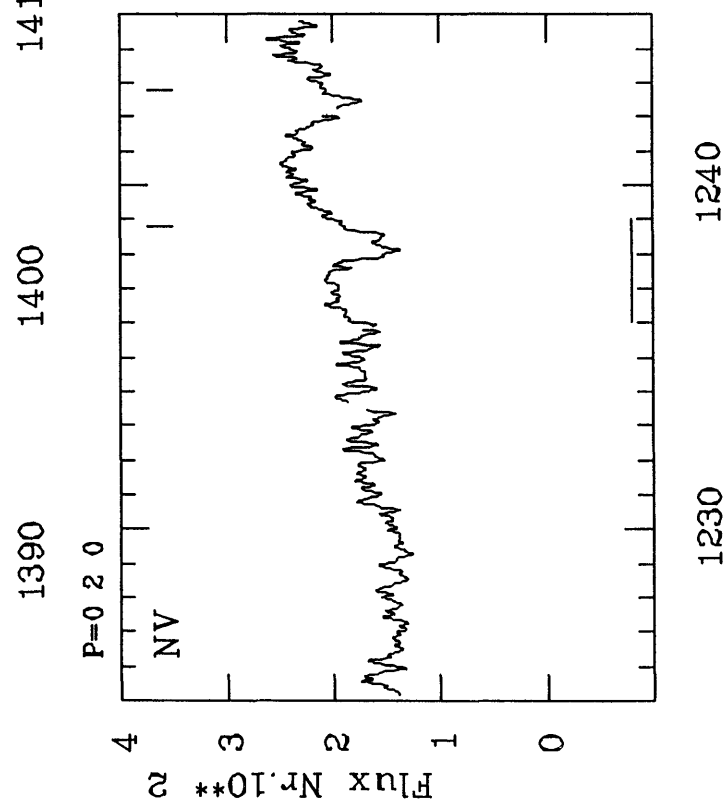
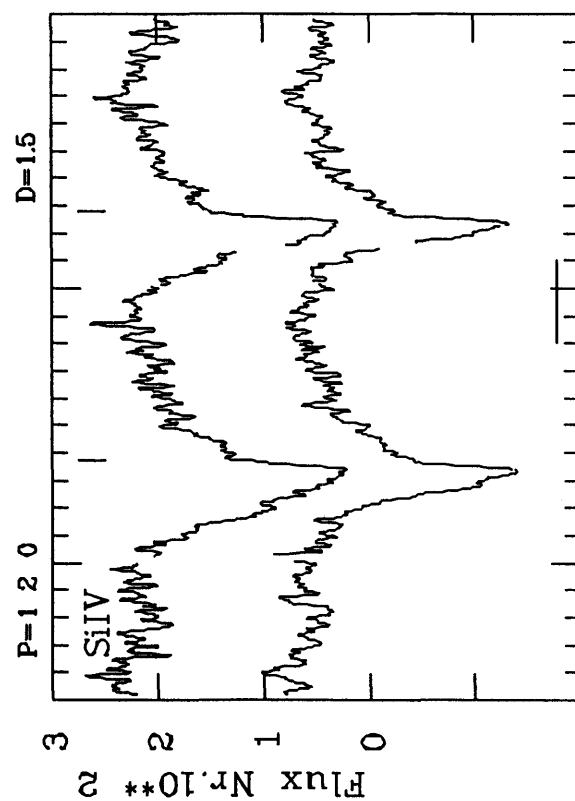
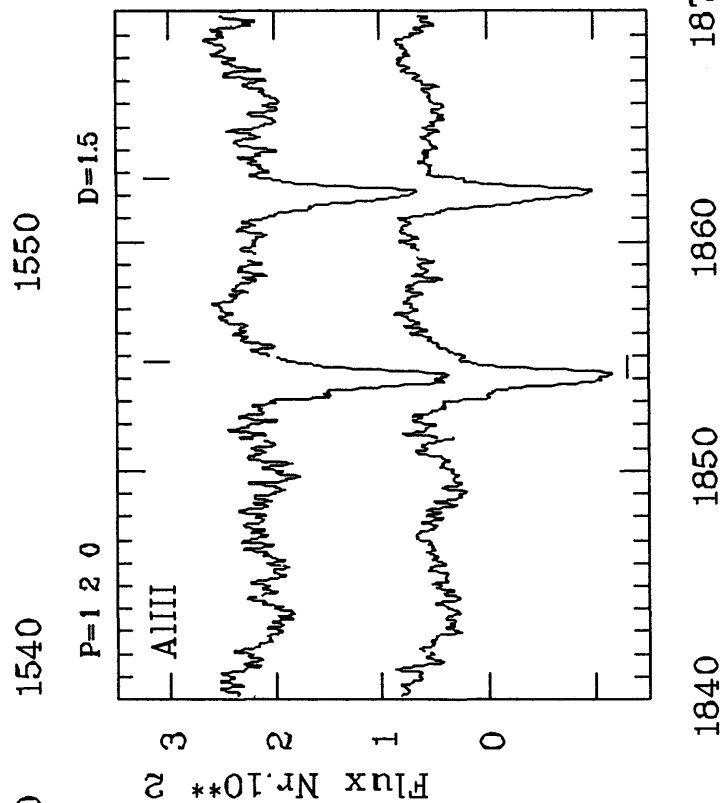
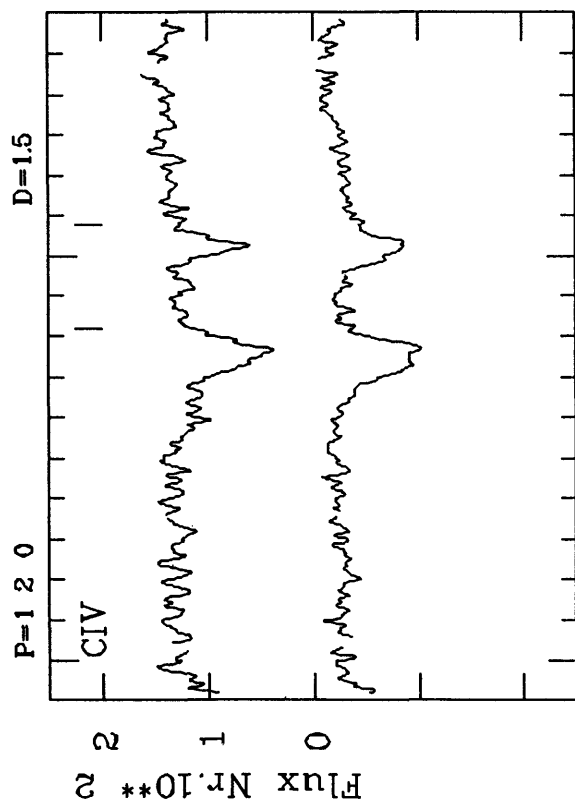
IUE 3 05914 S 79.07.23

IUE 2 16868 S 83.09.24

ESO R G13820 88.10.24

HD 20336 B2.5IV:e

vsini 250



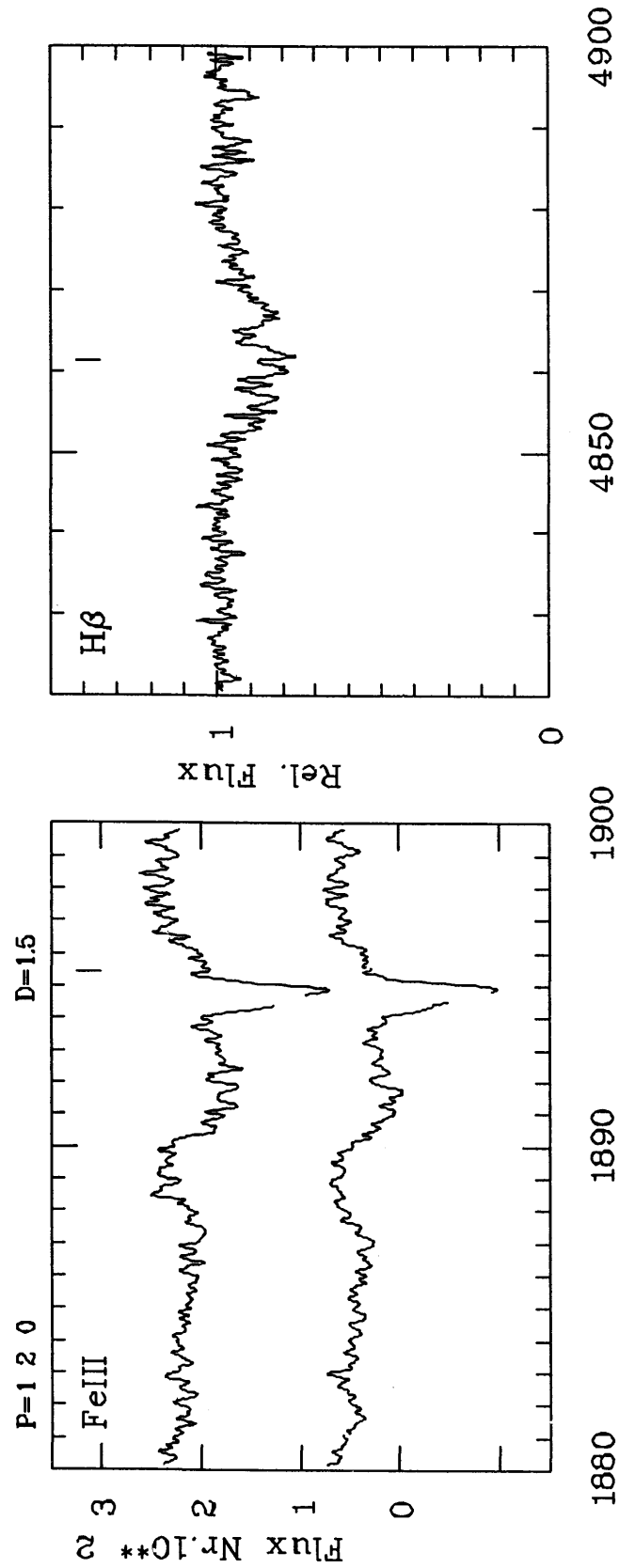
IUE 3 19934 L 83.05.08 - 3 29401 L 86.10.08

OHP B GB8145 84.01.02

HD 20336

B2.5IV:e

vsini 250

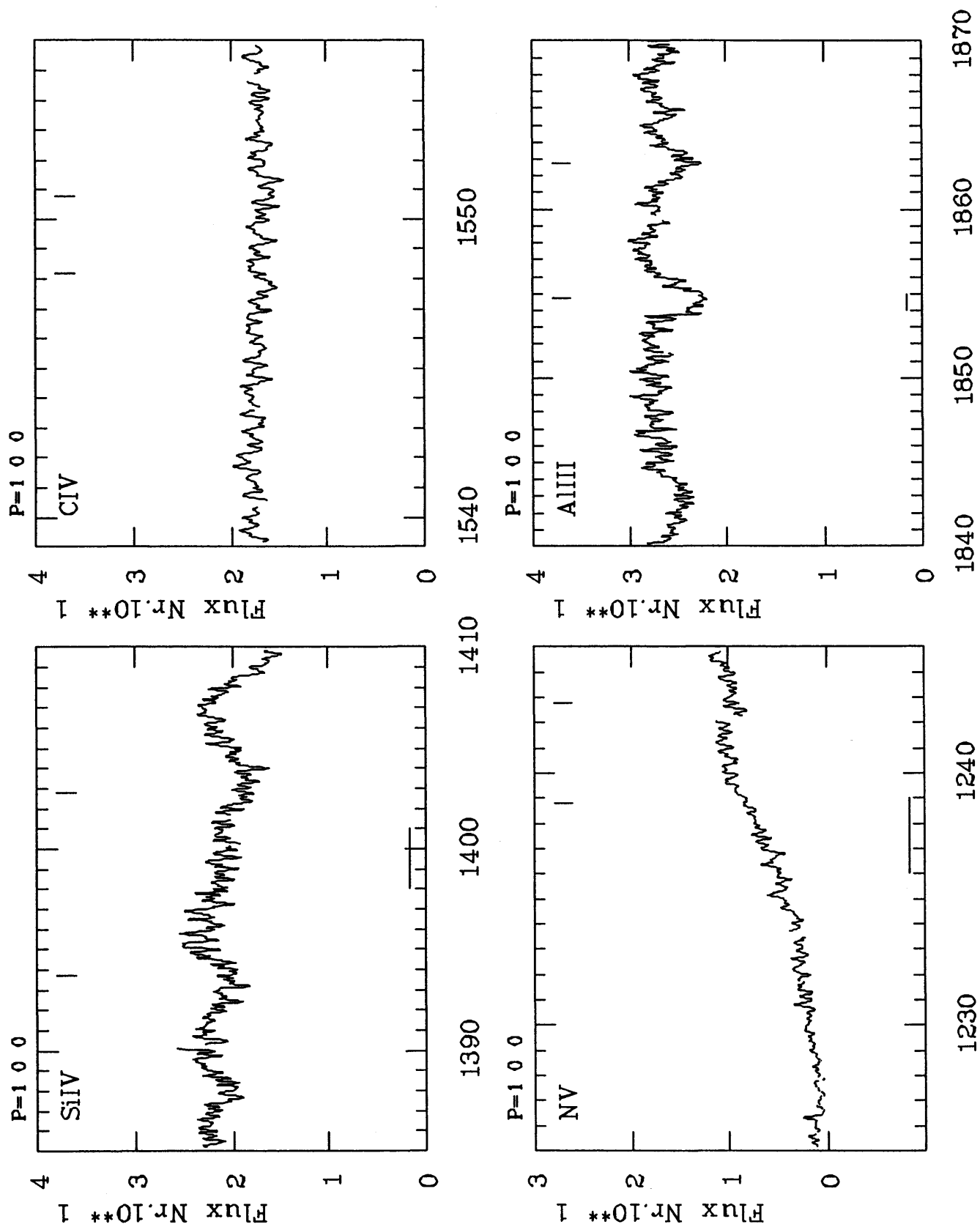


IUE 3 19934 L 83.05.08 - 3 29401 L 86.10.08

OHP B GB8145 84.01.02

HD 21551 B7Vsh?

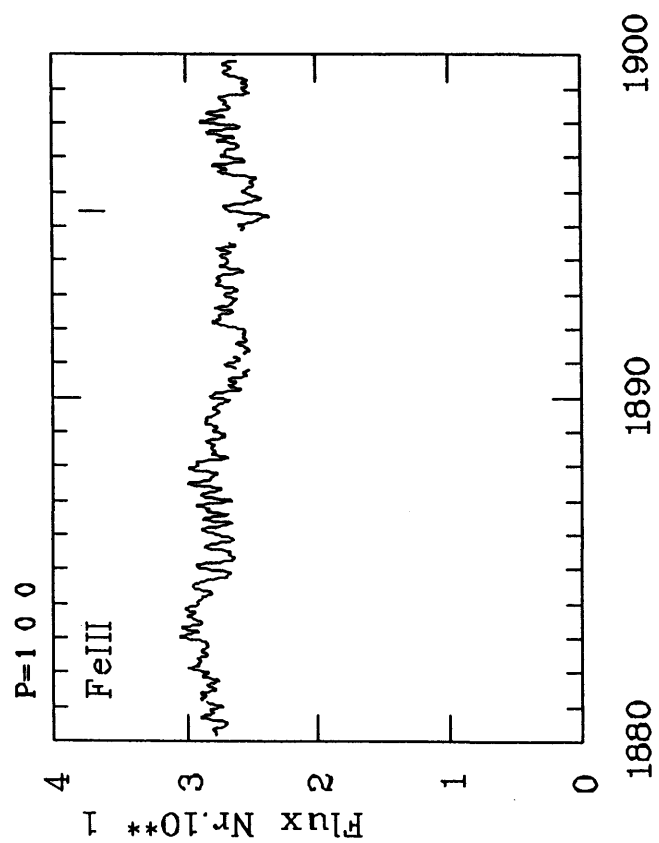
vsini 300



IUE 3 26895 L 85.10.08

HD 21551 B7Vsh?

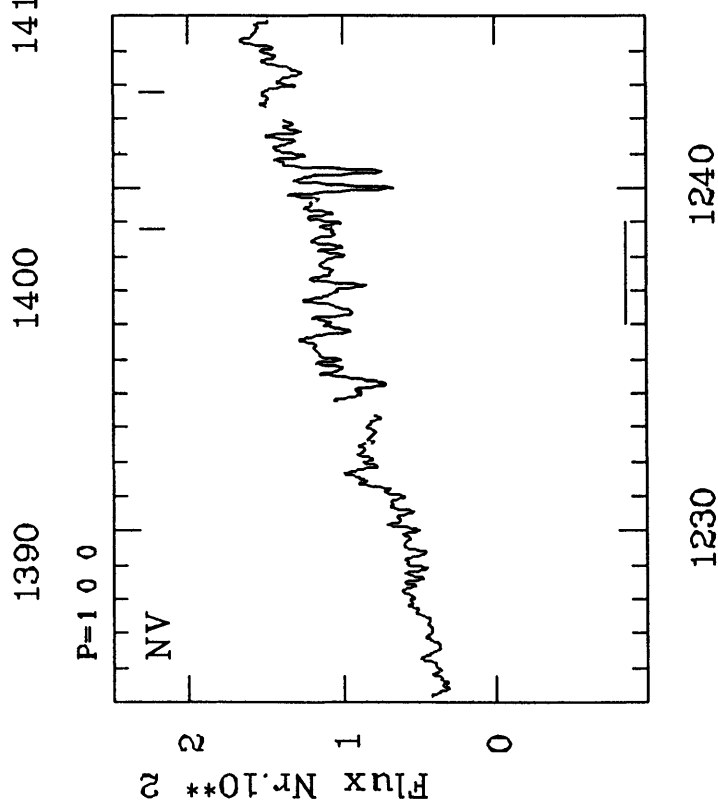
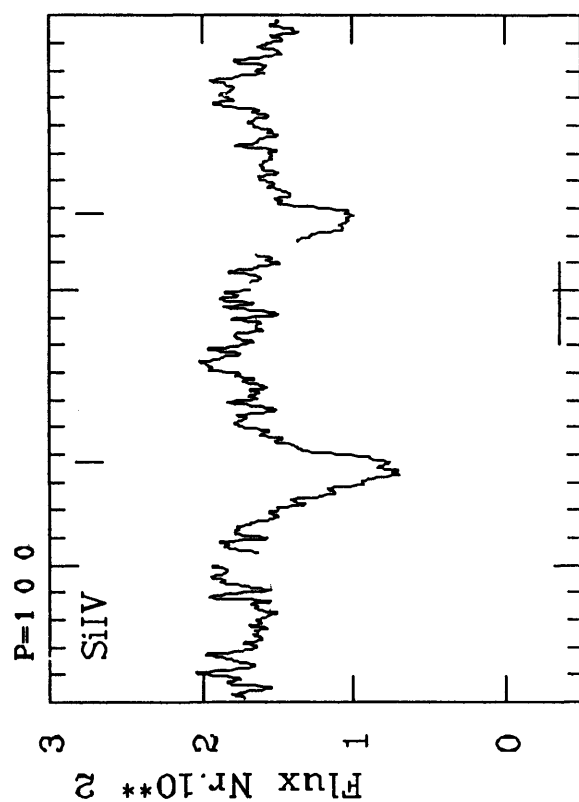
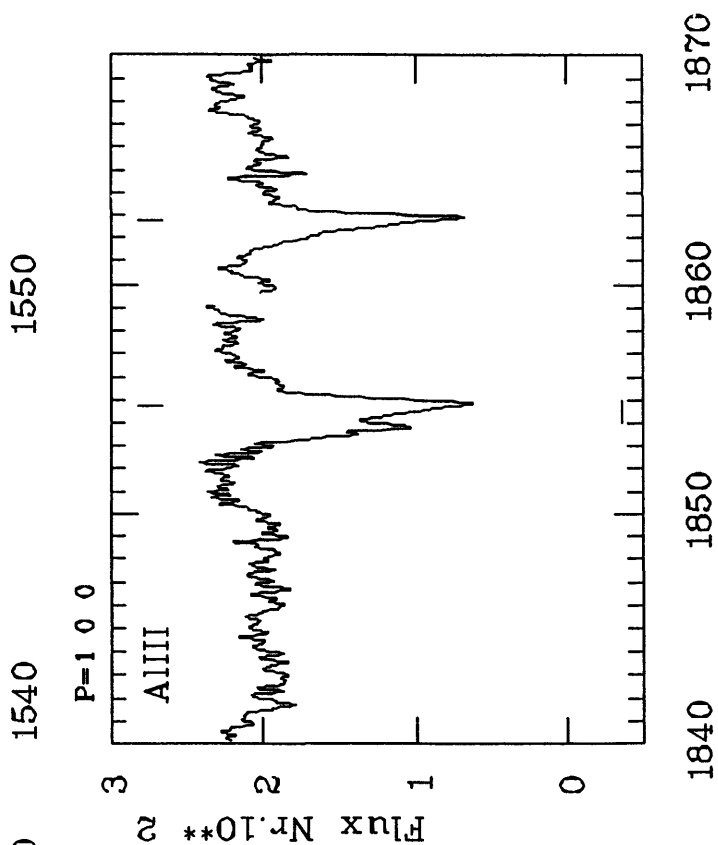
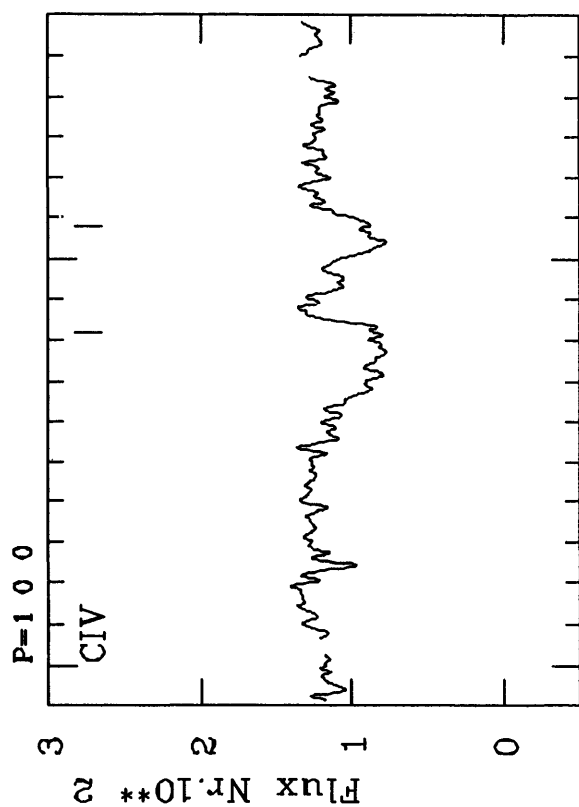
vsini 300



IUE 3 26895 L 85.10.08

HD 22192 B5IIIesh

vsini 280



IUE 3 04558 L 79.03.09

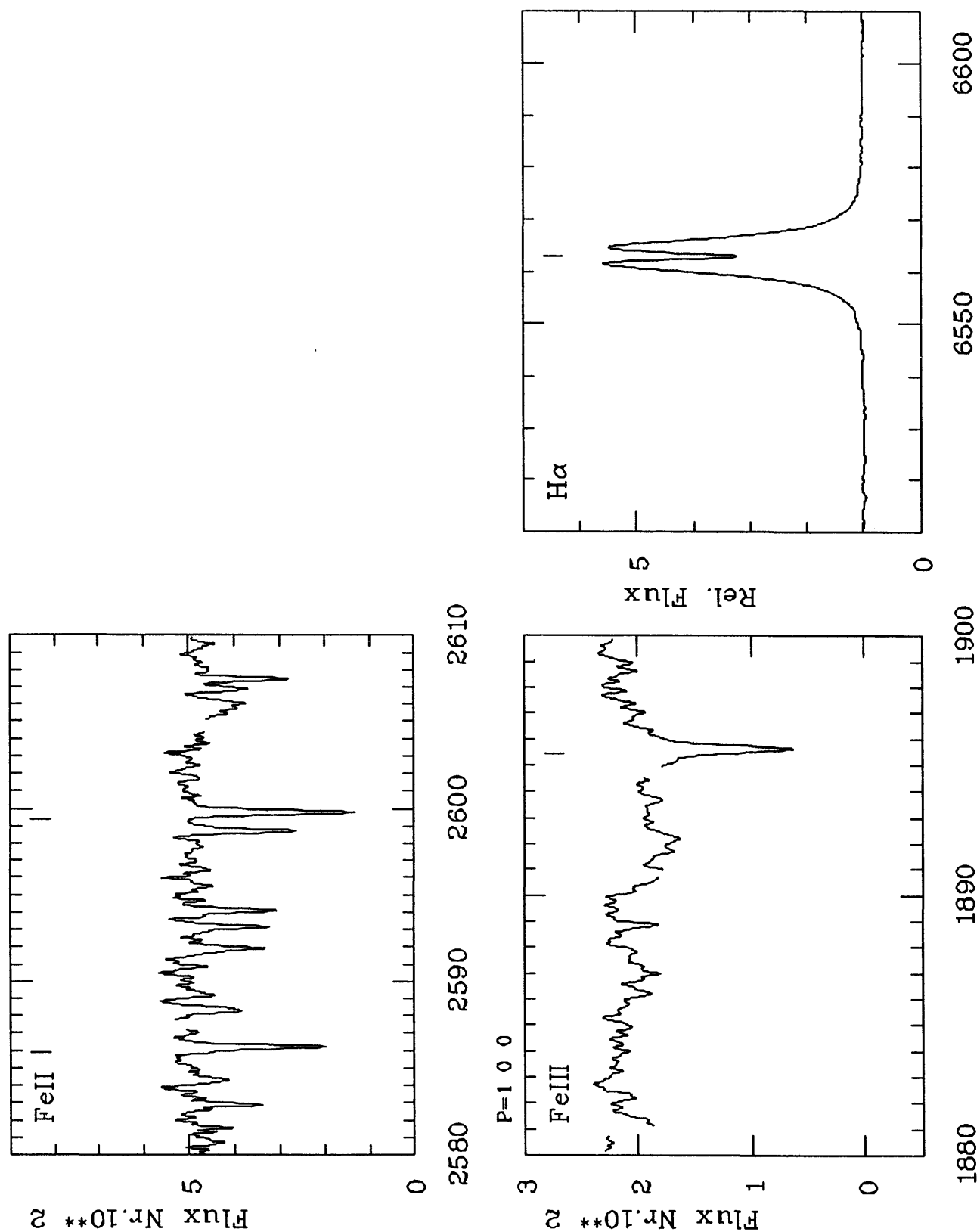
IUE 2 03968 L 79.03.09

OHP R CCD3

87.12.01

HD 22192 B5IIIesh

vsini 280



IUE 3 04558 L 79.03.09

IUE 2 03968 L 79.03.09

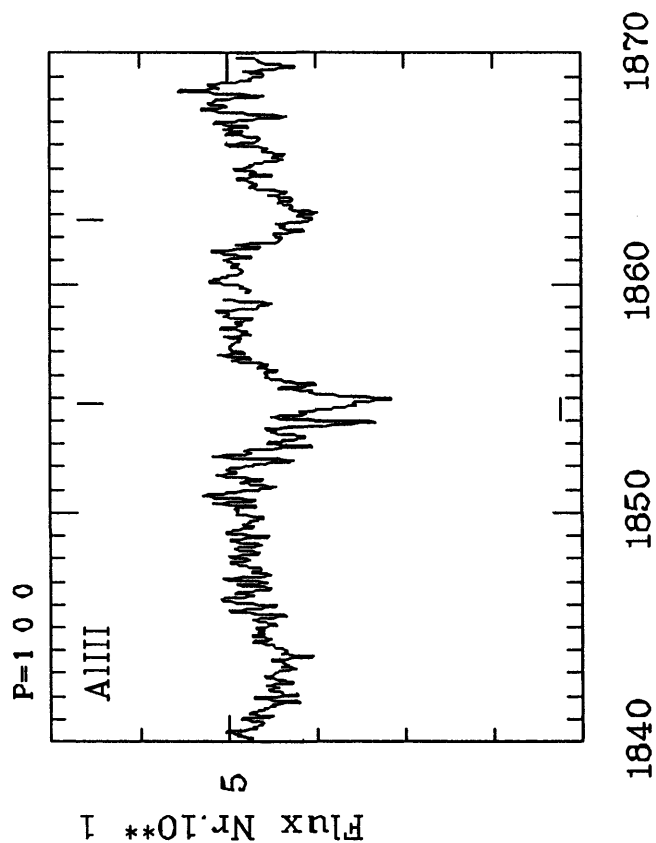
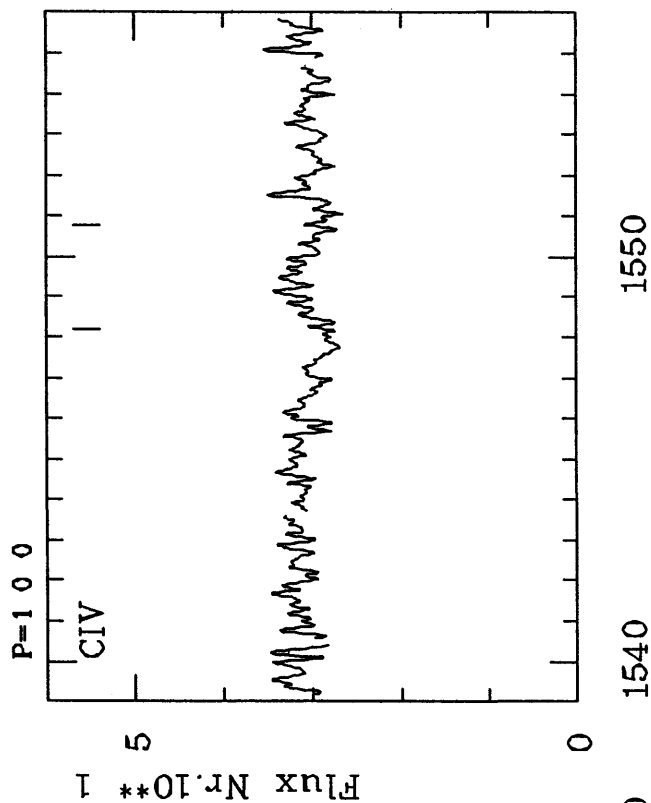
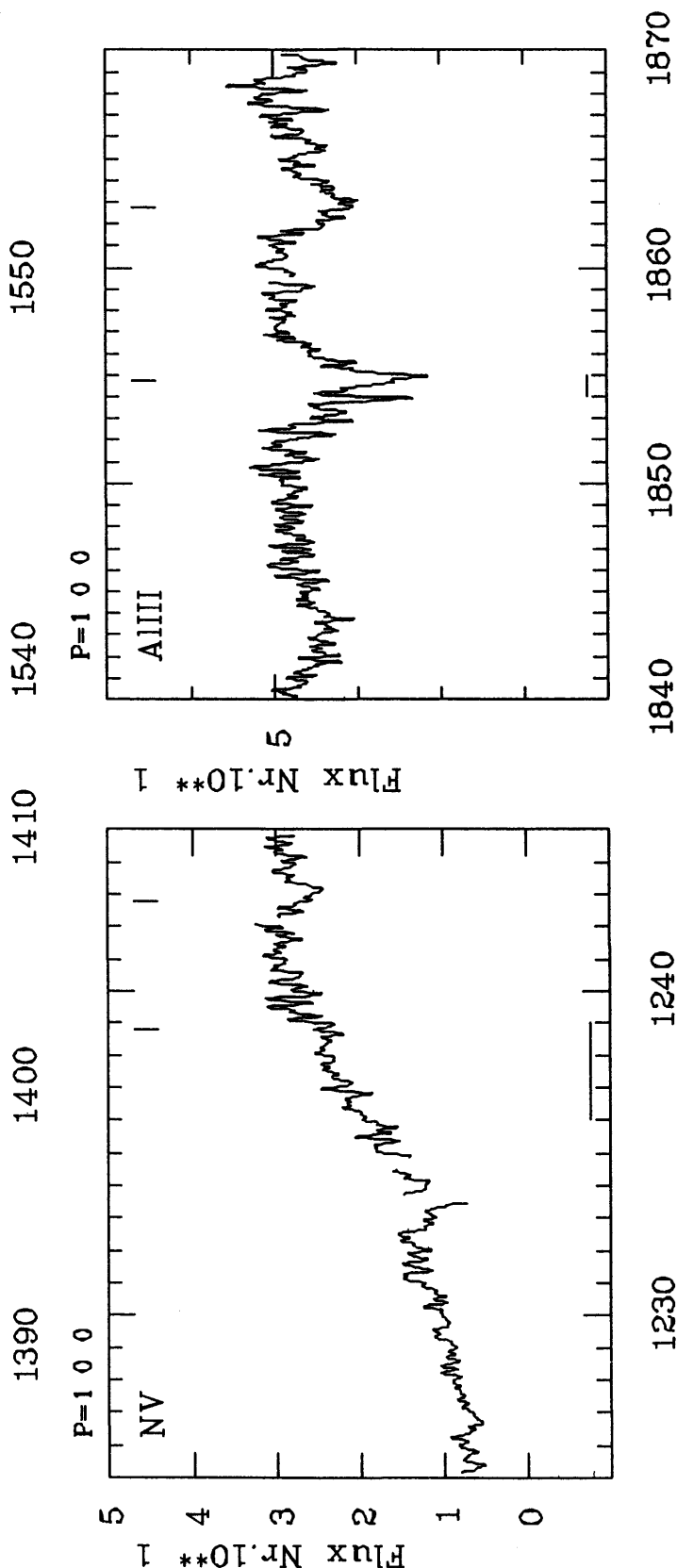
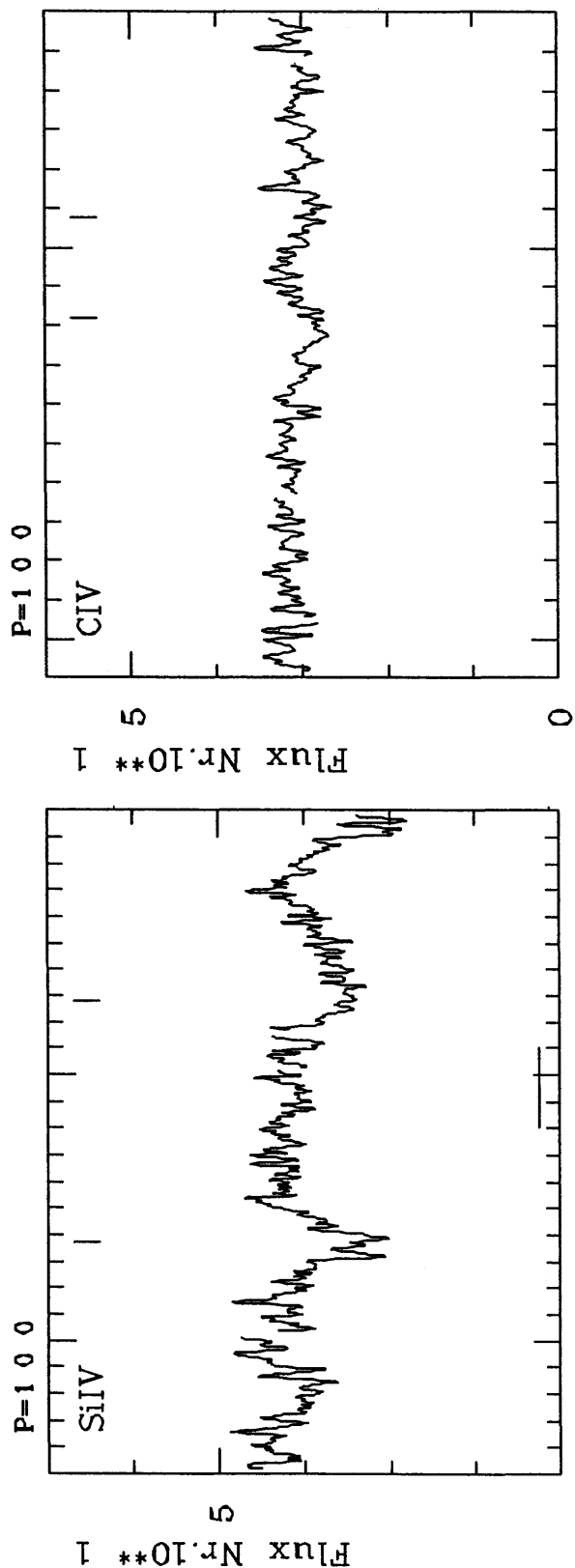
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OHP R CCD3

87.12.01

HD 22780 B6Ve

vsini 280



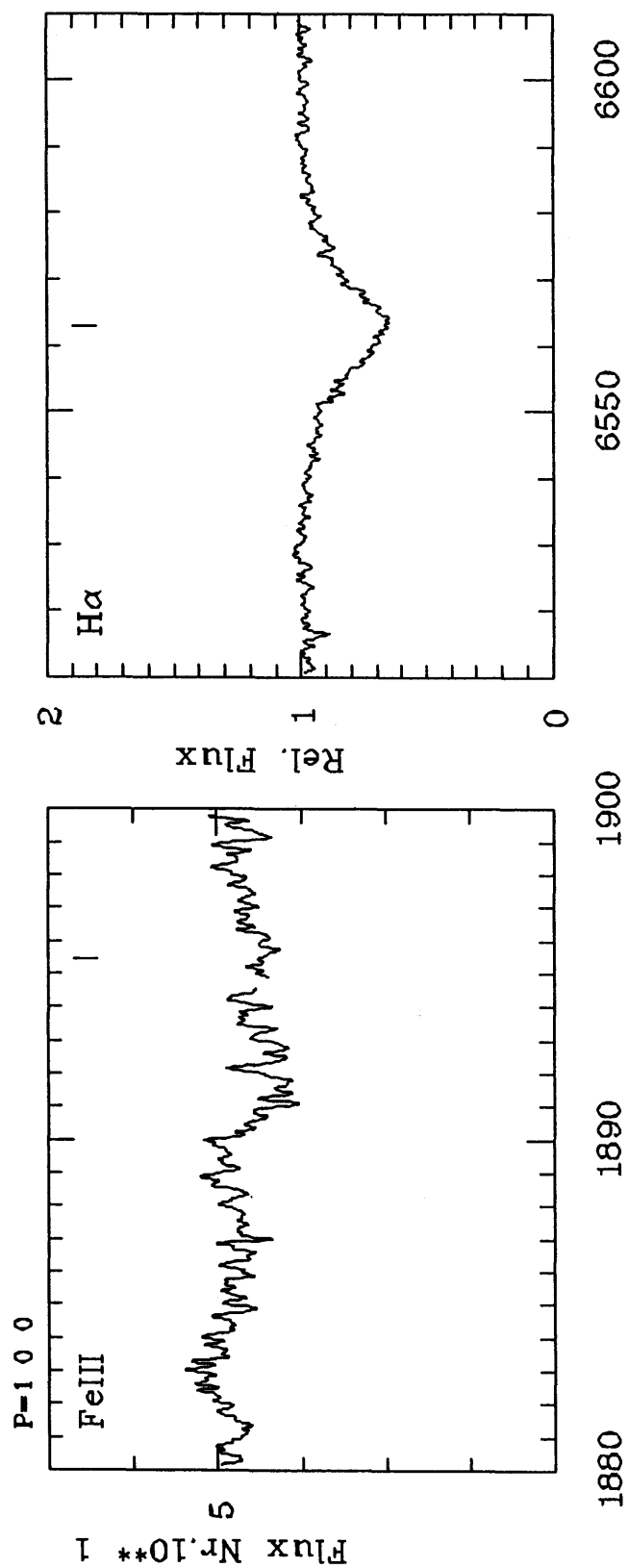
IUE 3 29392 L 86.10.07

OHP R GA7845

87.11.28

HD 22780 B6Ve

vsini 280



IUE 3 29392 L 86.10.07

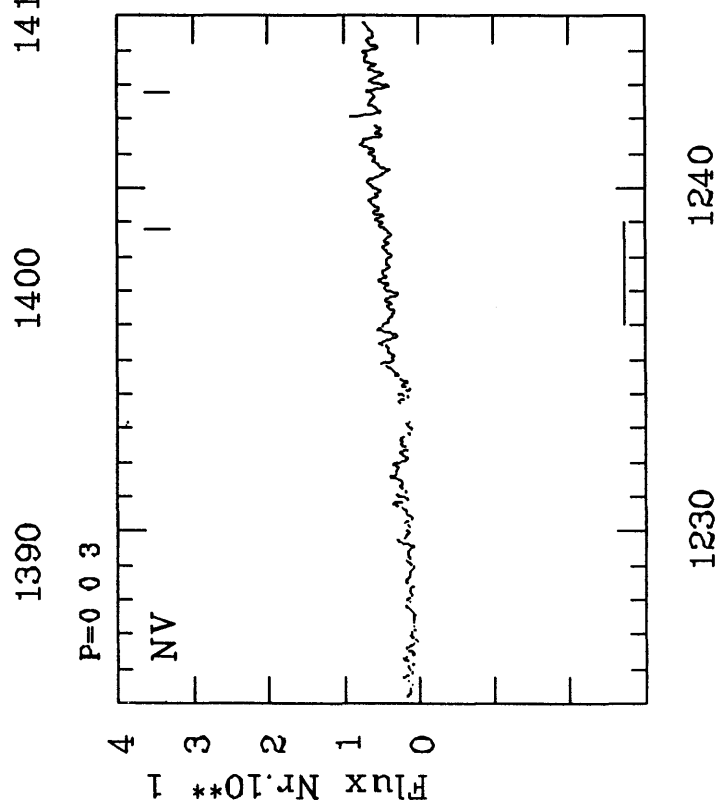
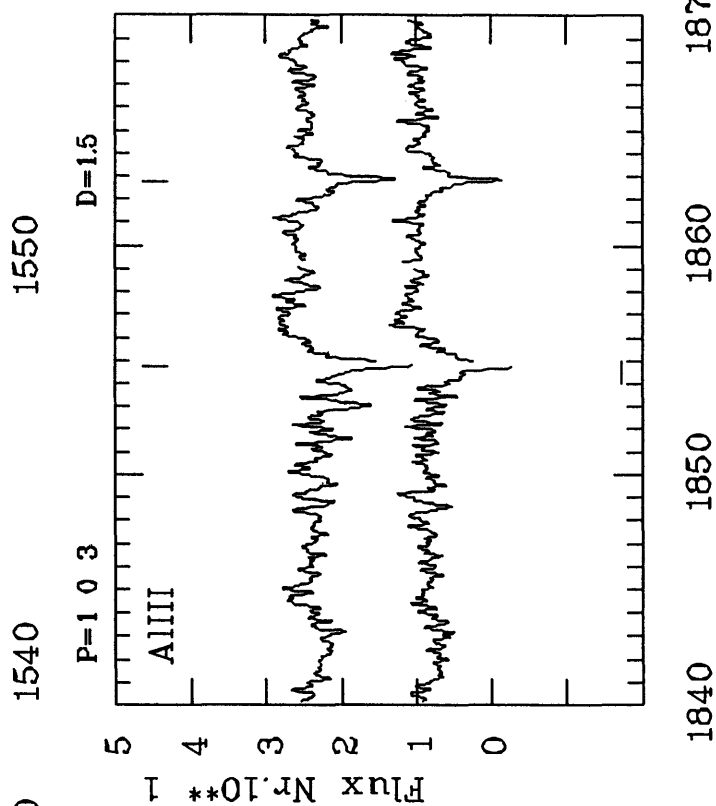
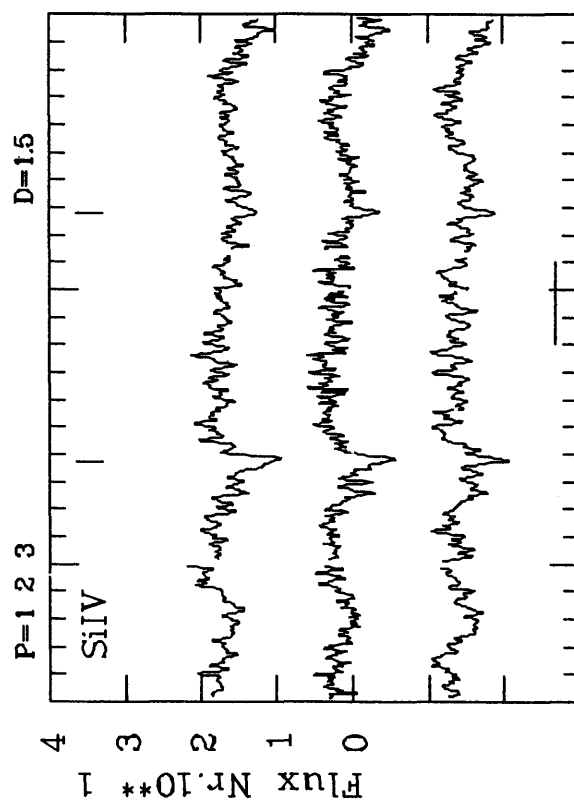
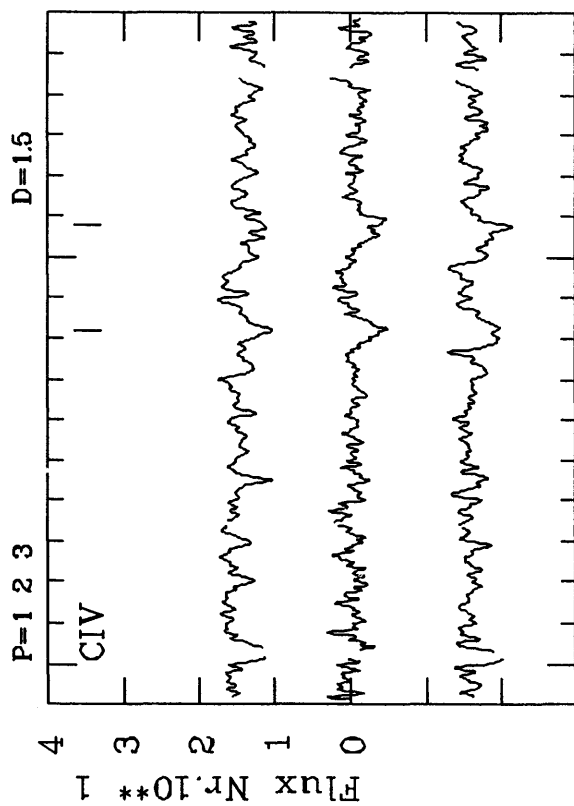
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OHP R GA7845 87.11.28

HD 23016 B7Ve

vsini 260

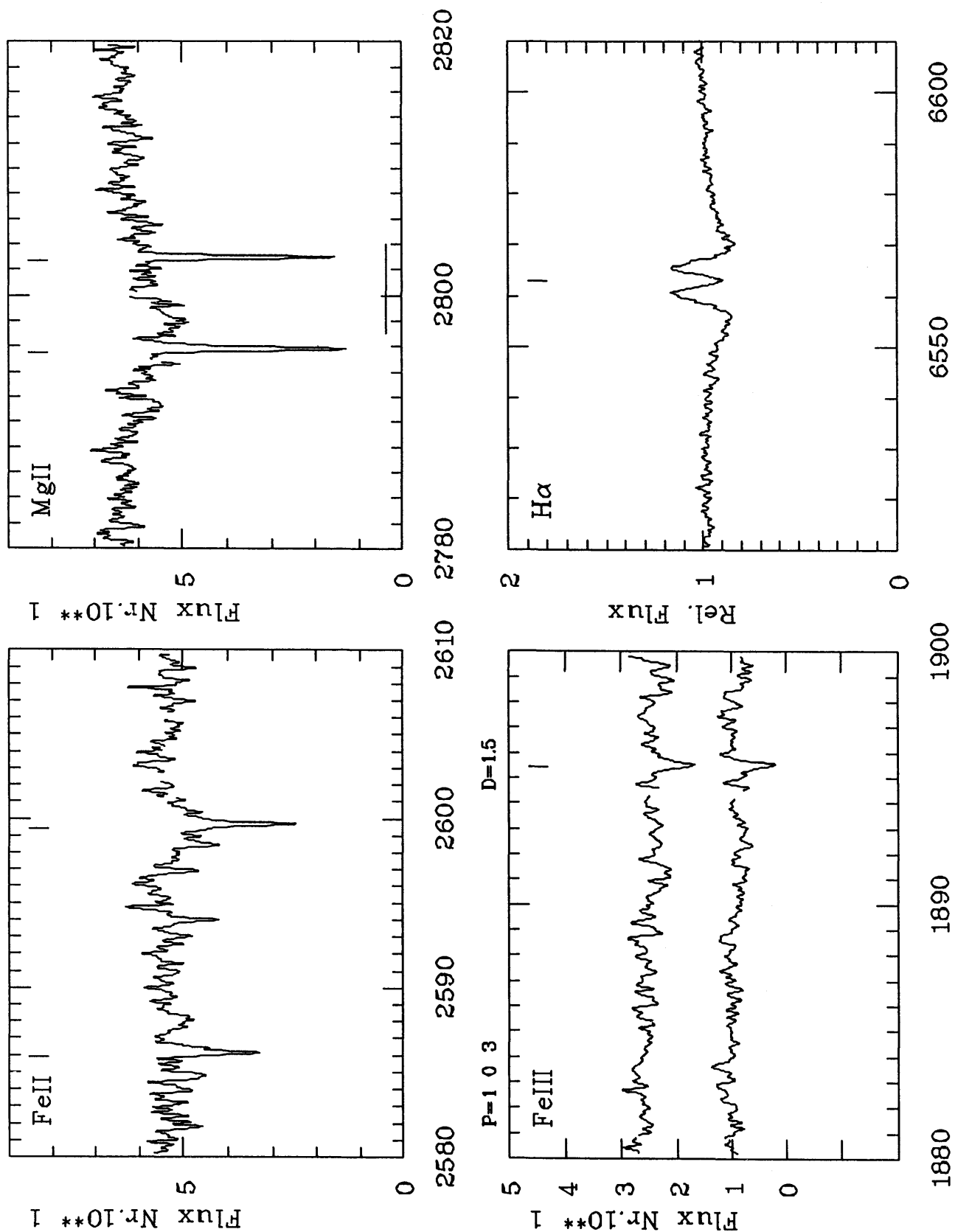


IUE 3 27511 L 86.01.12 - 3 27512 L 86.01.12 - 3 27668 L 86.02.06
 IUE 1 07478 L 86.01.12

OHP R GA7843 87.11.27

HD 23016 B7Ve

vsini 260



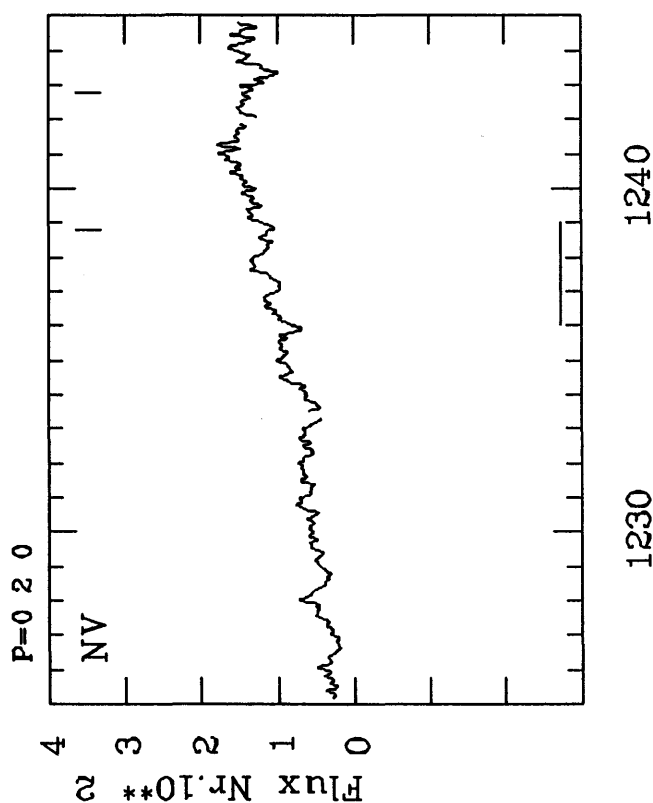
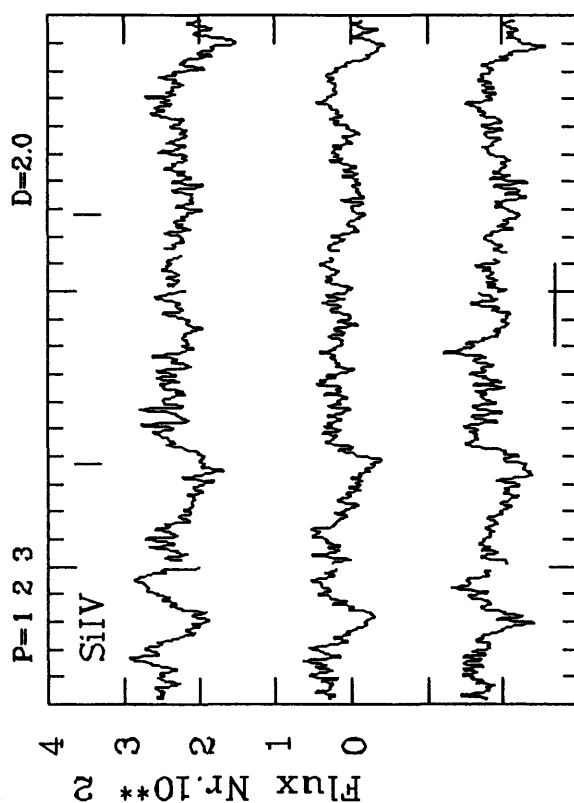
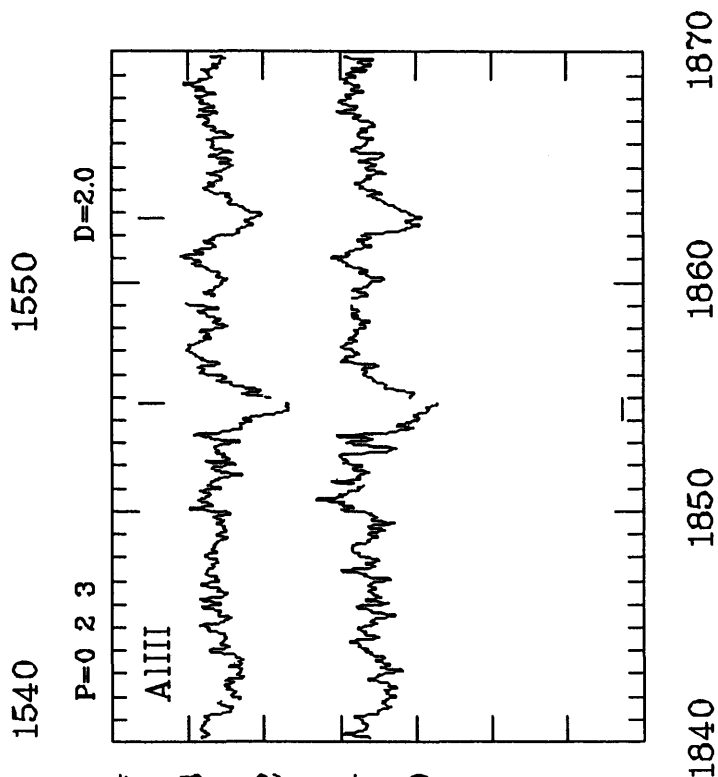
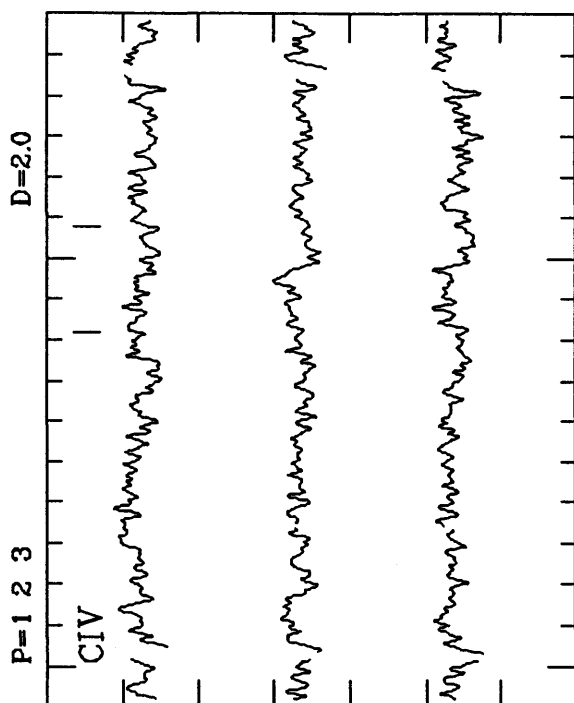
IVE 3 27511 L 86.01.12 - 3 27512 L 86.01.12 - 3 27668 L 86.02.06
 IVE 1 07478 L 86.01.12

OHP R GA7843 87.11.27

HD 23302

B6IIIe

vsini 180



IUE 3 07920 L 80.02.11 - 3 27514 L 86.01.12 - 3 27667 L 86.02.06
 IUE 1 07479 L 86.01.12

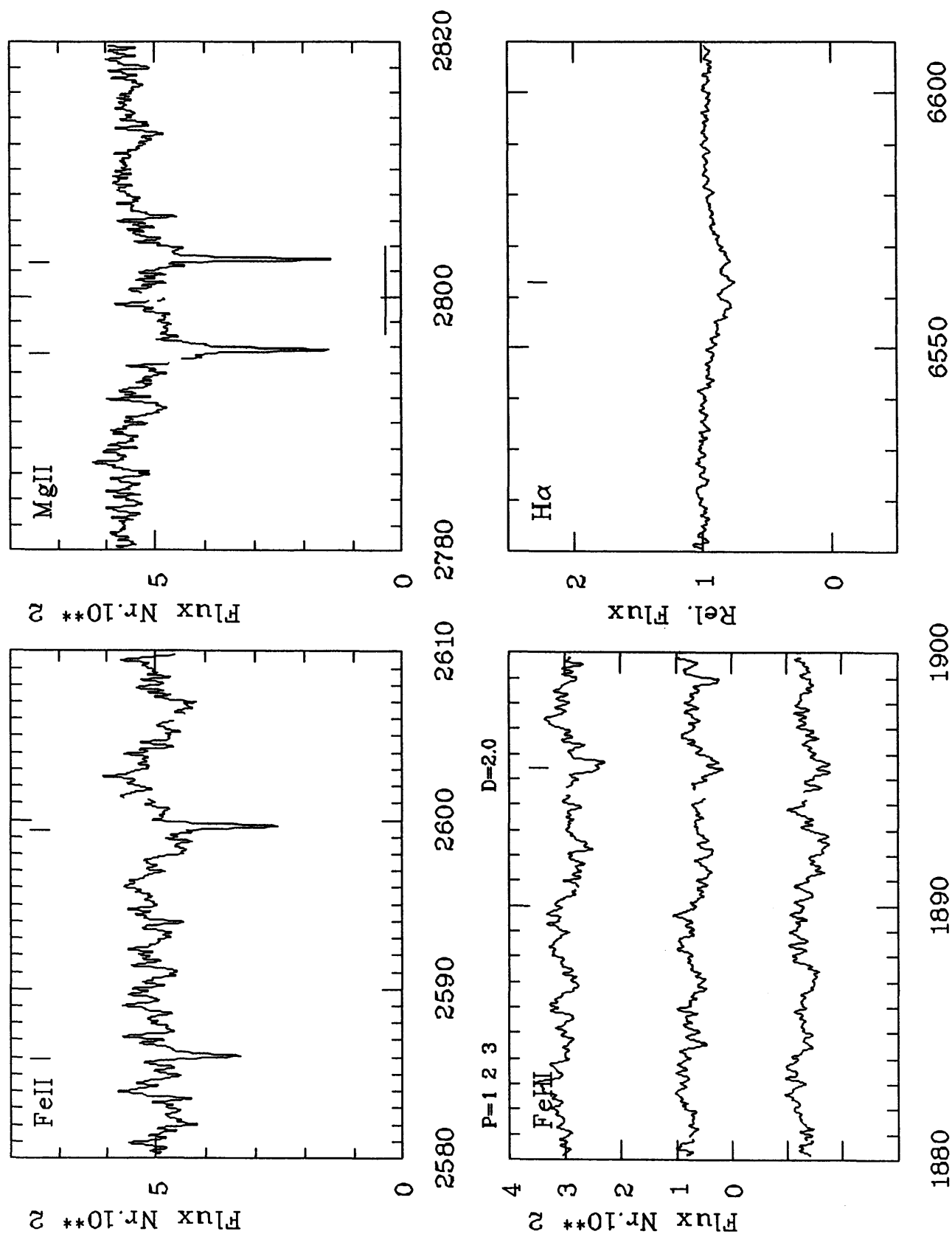
OHP R GA8371

88.11.26

HD 23302

B6IIIe

vsini 180



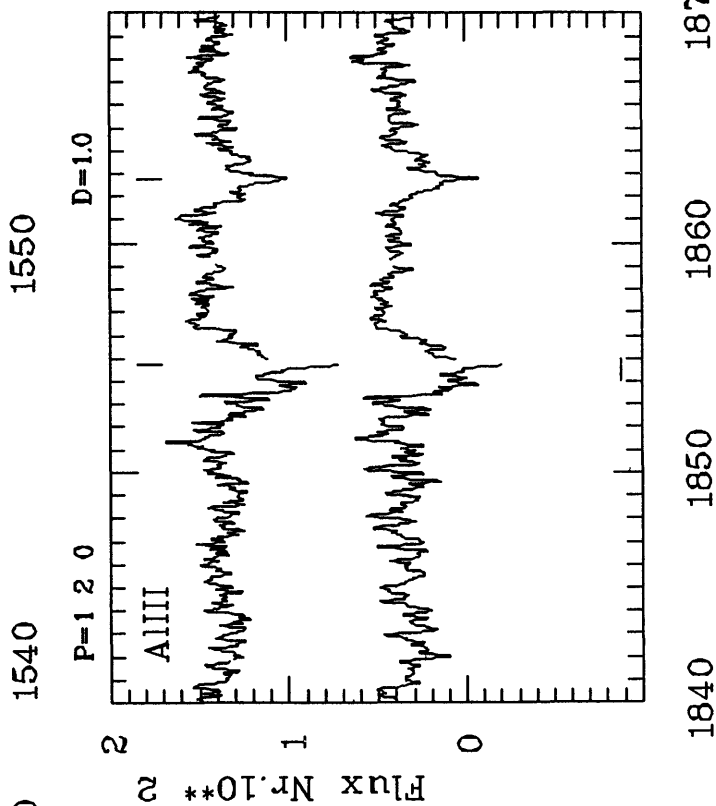
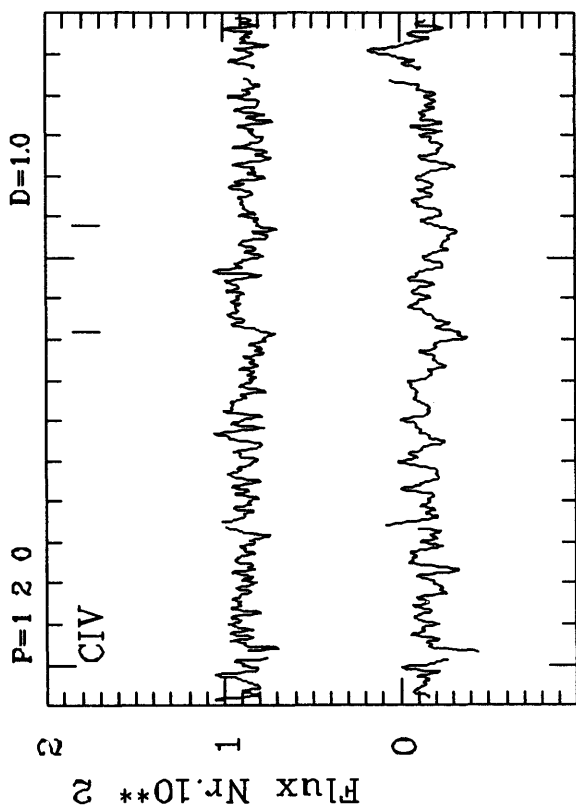
IUE 3 07920 L 80.02.11 - 3 27514 L 86.01.12 - 3 27667 L 86.02.06
 IUE 1 07479 L 86.01.12

OHP R GA8371 88.11.26

HD 23480

B6IVe

vsini 280



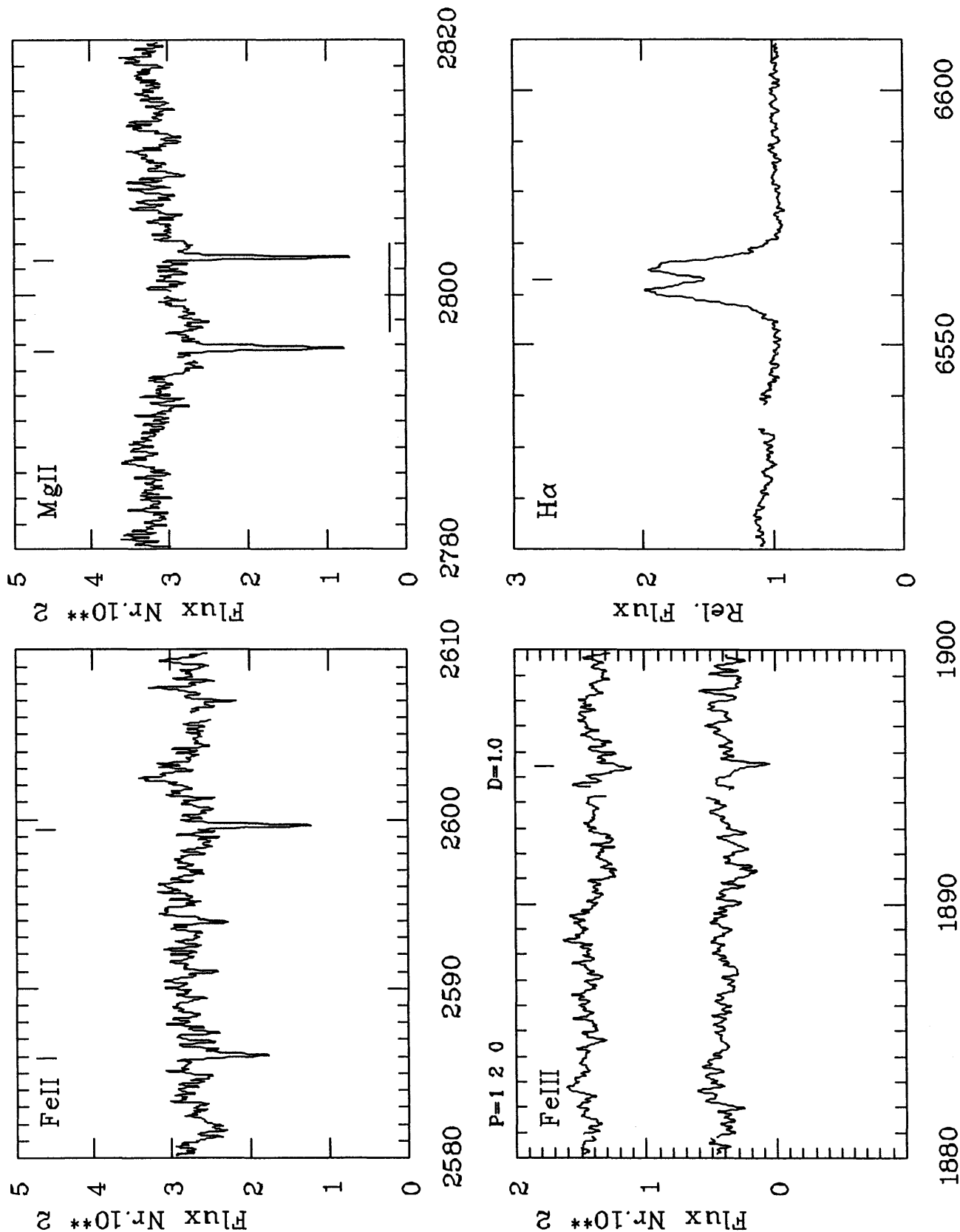
IUE 3 27516 L 86.01.12 - 3 27666 L 86.02.06
 IUE 1 07481 L 86.01.12

OHP R GA8345

88.11.21

HD 23480 B6IVe

vsini 280

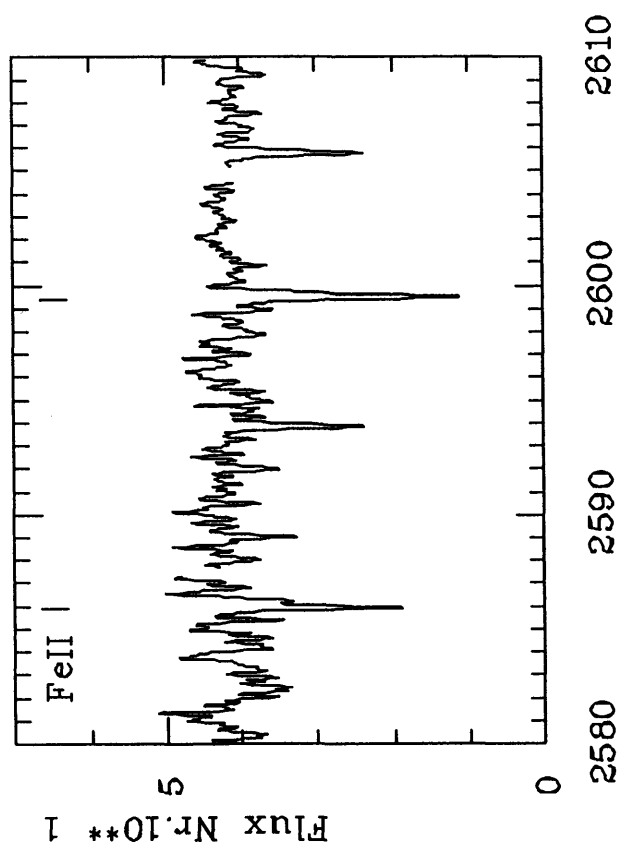


IUE 3 27516 L 86.01.12 - 3 27666 L 86.02.06
IUE 1 07481 L 86.01.12

OHP R GA8345 88.11.21

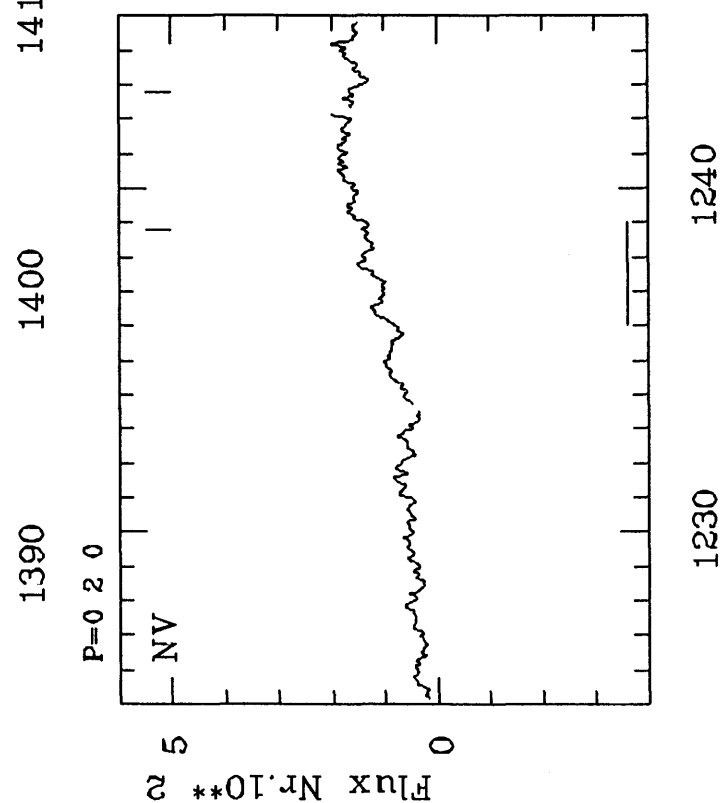
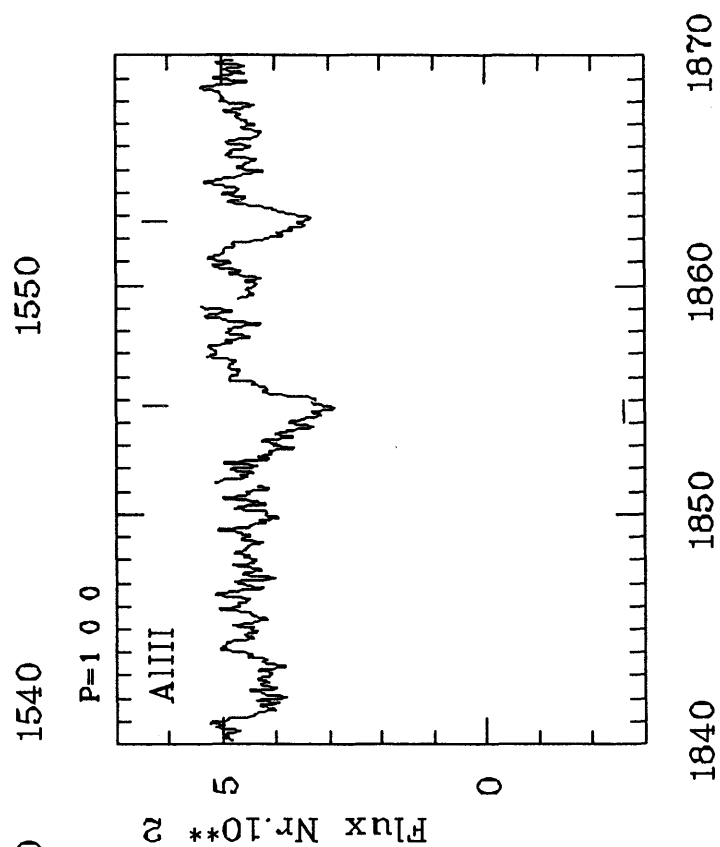
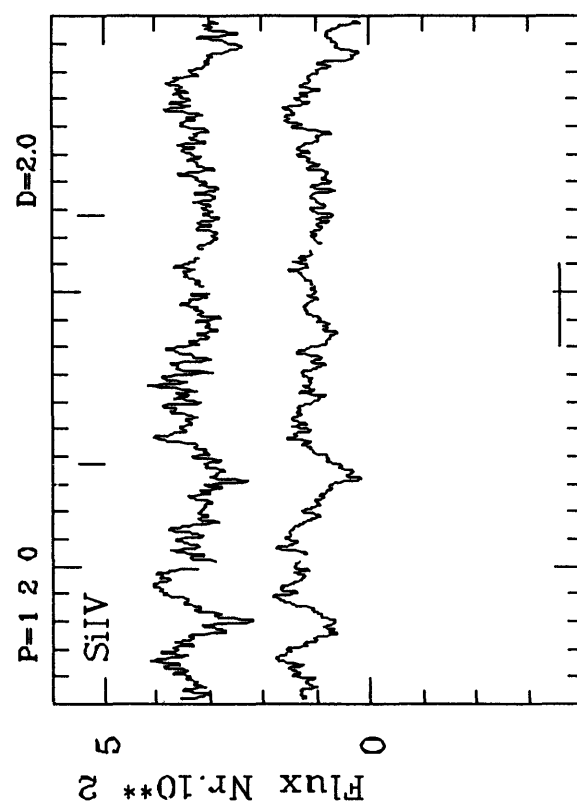
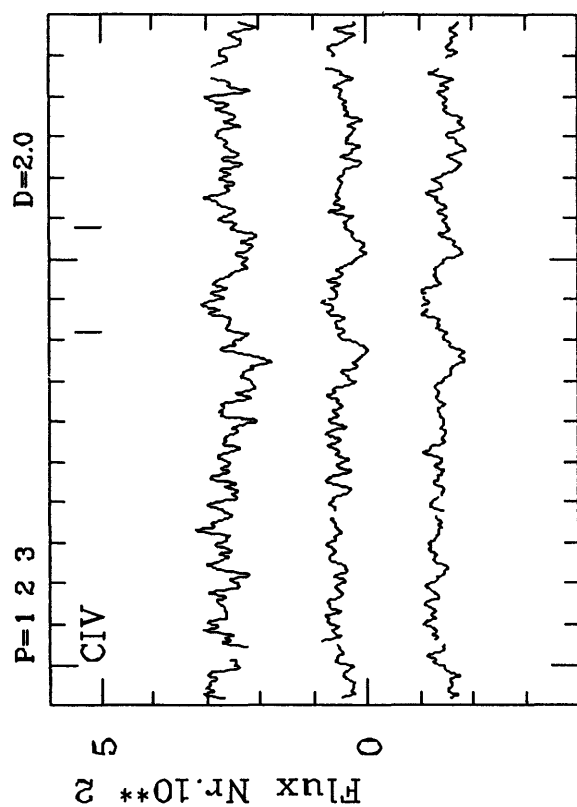
HD 23552 B6Ve

vsini 220

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IUE 2 08744 L 80.09.07
-
-

HD 23630 B7IIIe

vsini 140

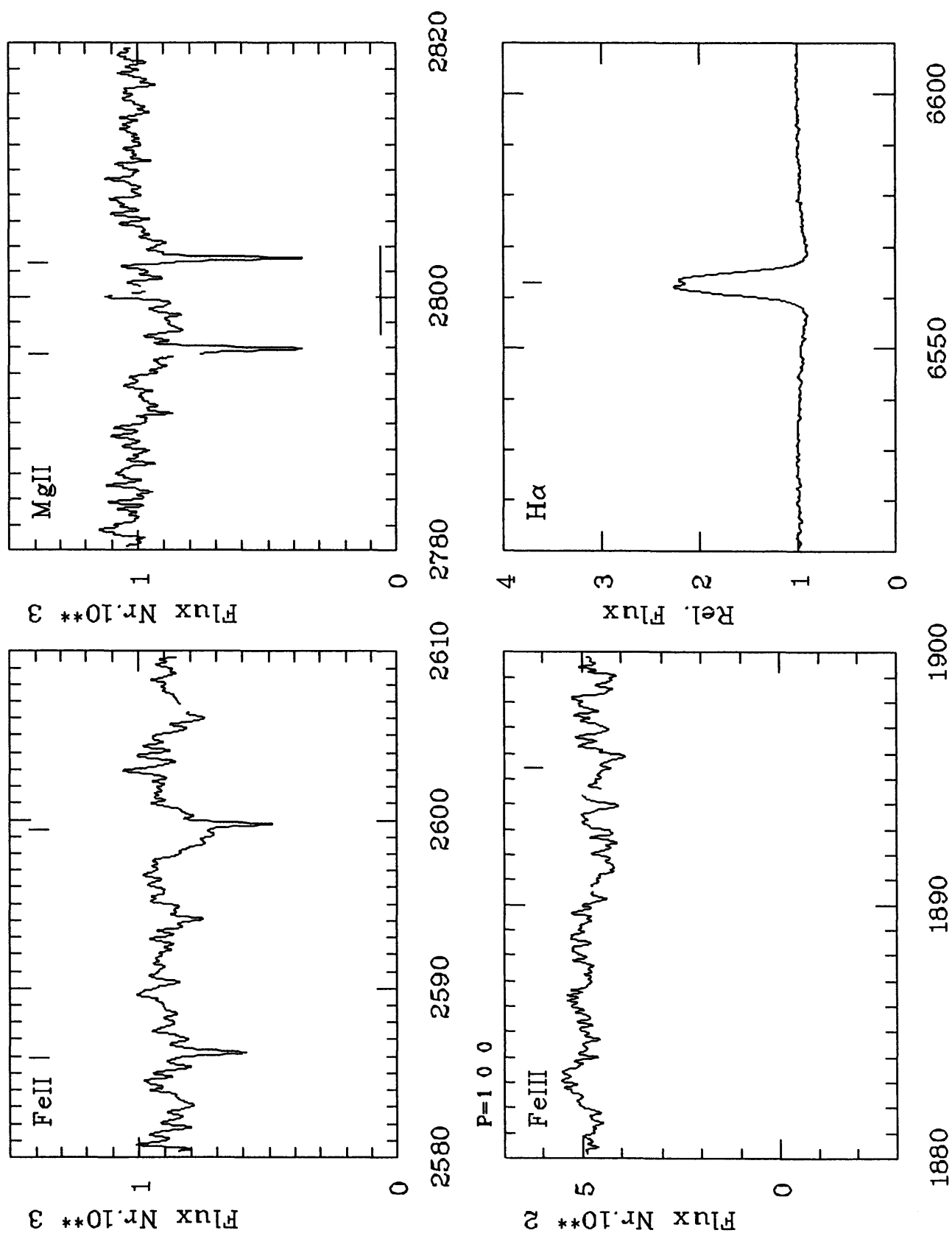


IUE 3 08021 L 80.02.23 - 3 29108 L 86.09.01 - 3 29111 L 86.09.01
 IUE 1 08983 L 86.09.01

OHP R GB8151 84.01.04

HD 23630 B7IIIe

vsini 140

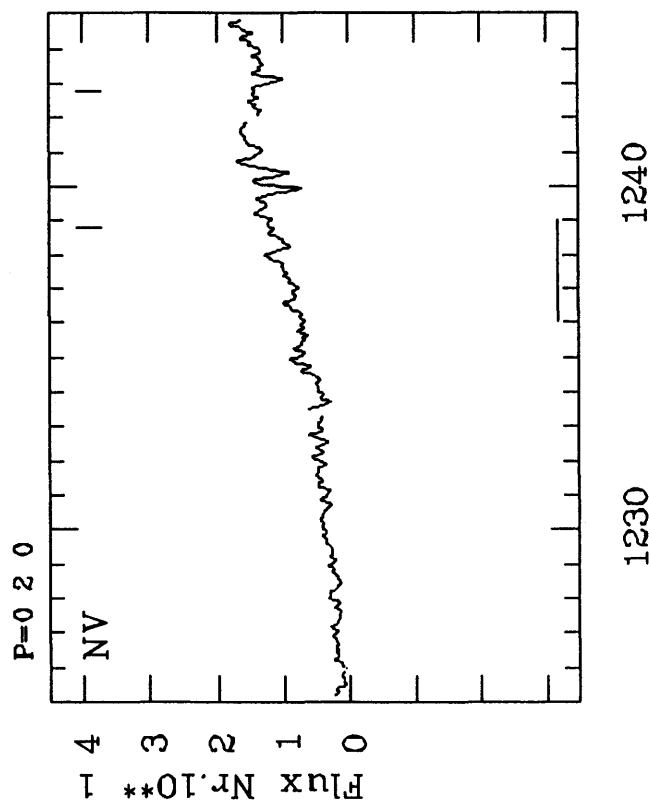
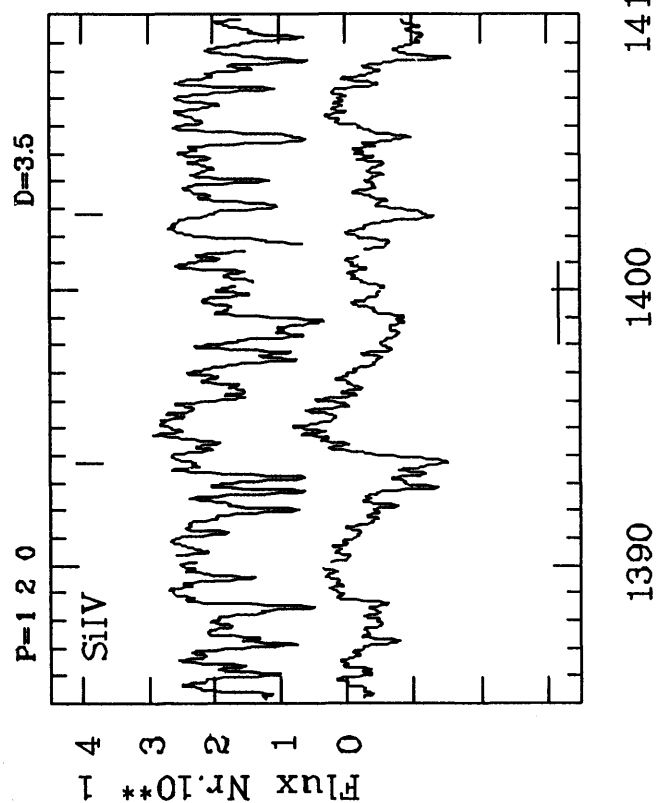
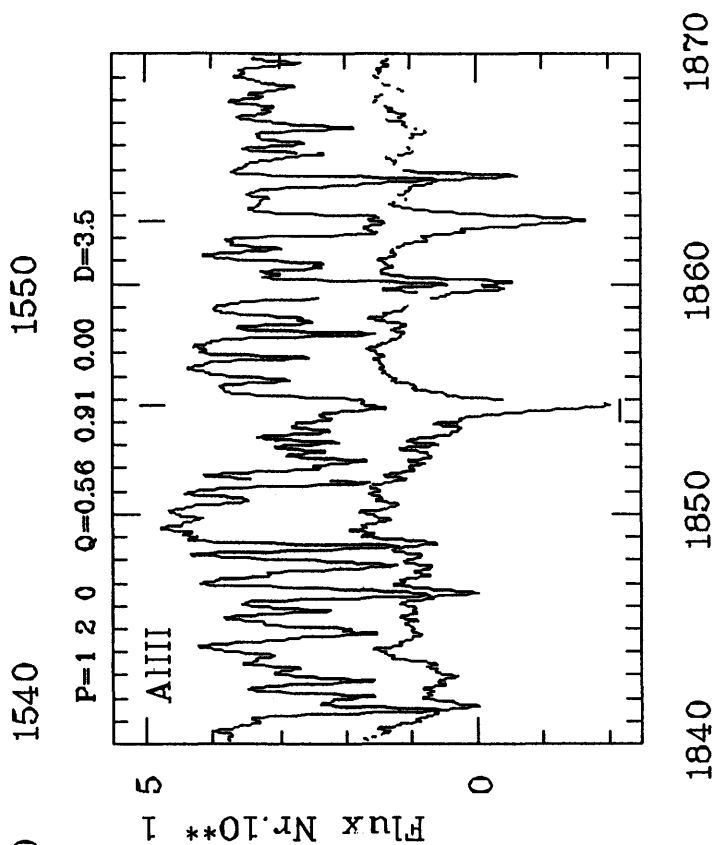
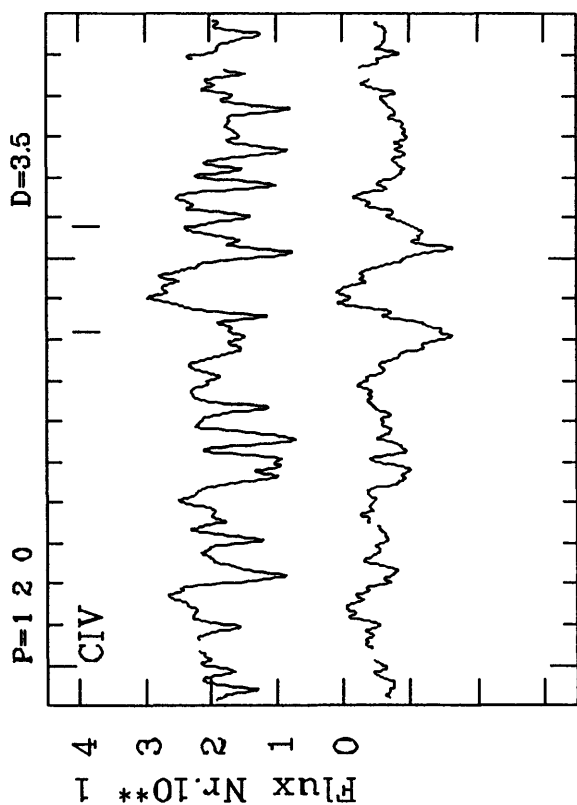


IUE 3 08021 L 80.02.23 - 3 29108 L 86.09.01 - 3 29111 L 86.09.01
 IUE 1 08983 L 86.09.01

OHP R GB8151 84.01.04

HD 23862 B8V:esh

vsini 320



IUE 3 05987 L 79.07.29 - 3 32681 L 88.01.07

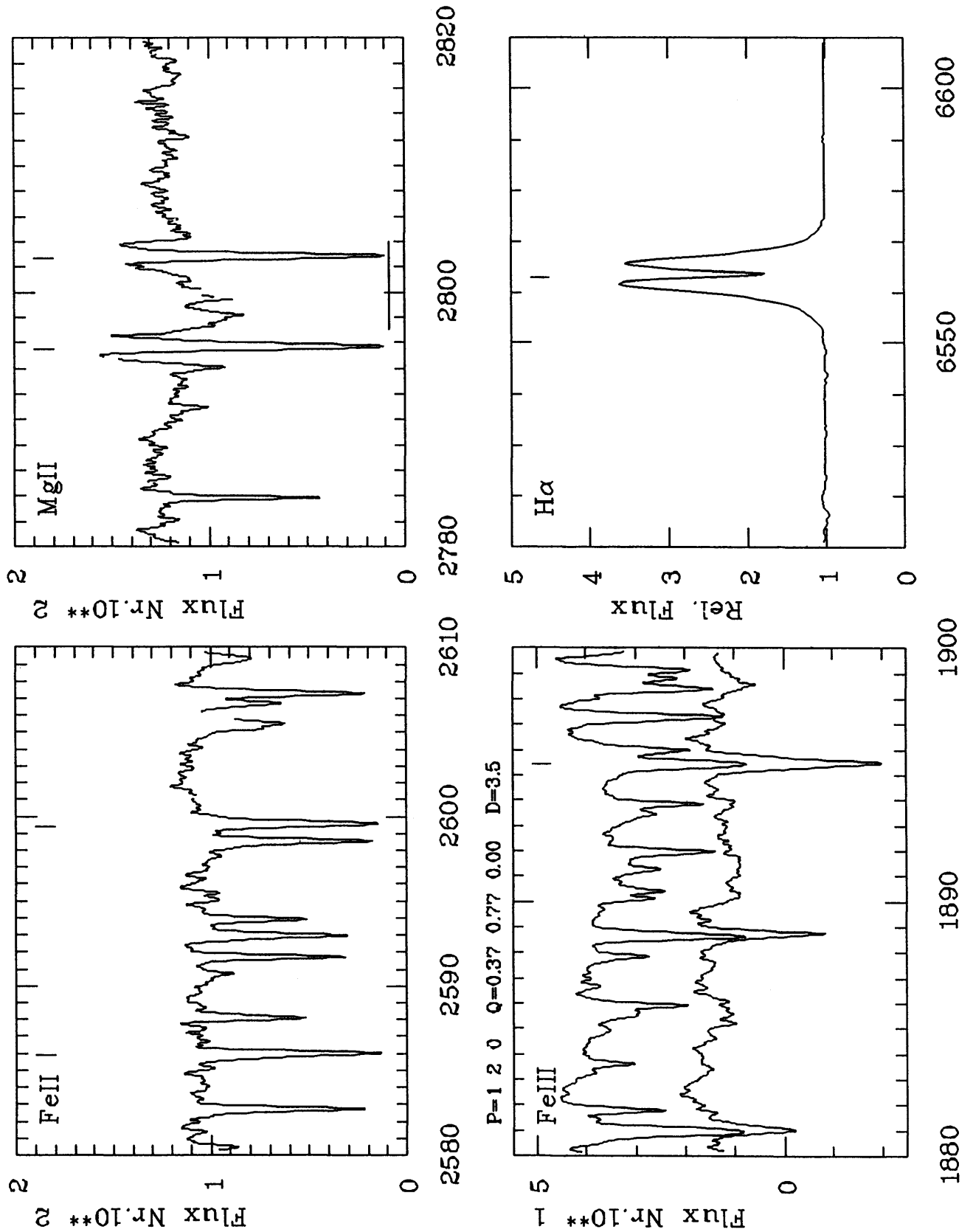
IUE 1 12731 L 88.02.24

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OHP R CCD20017 88.01.31

HD 23862 B8V:esh

vsini 320



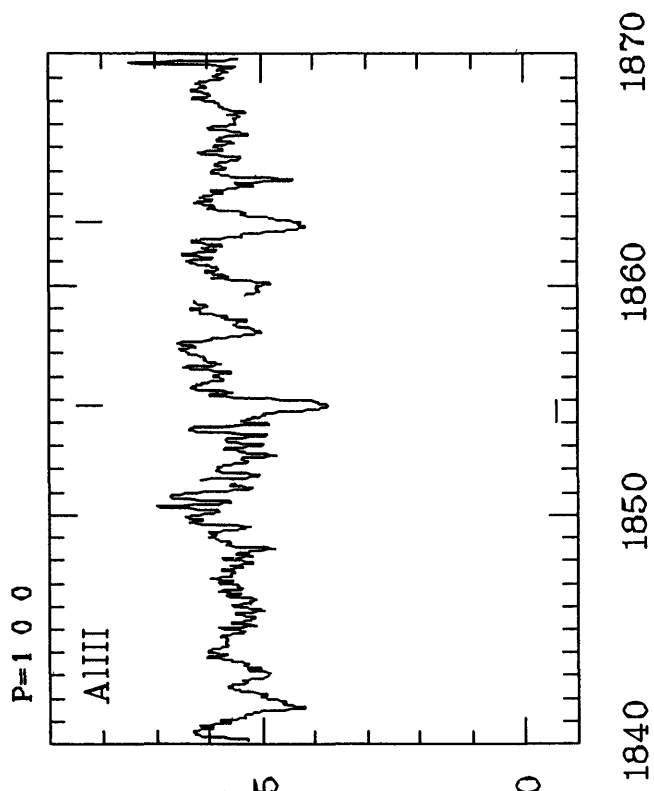
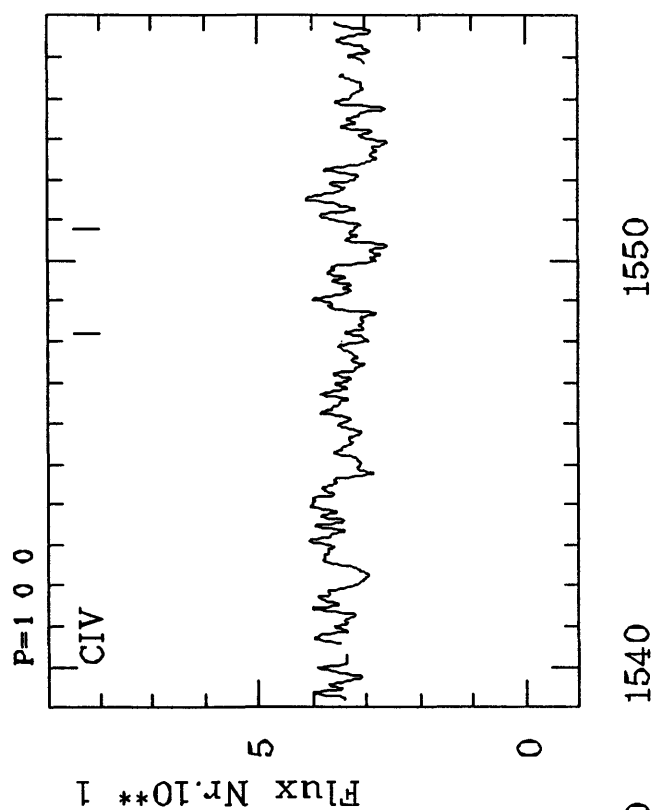
IUE 3 05987 L 79.07.29 - 3 32681 L 88.01.07

IUE 1 12731 L 88.02.24

OHP R CCD20017 88.01.31

HD 24479 B9IVe

vsini 100



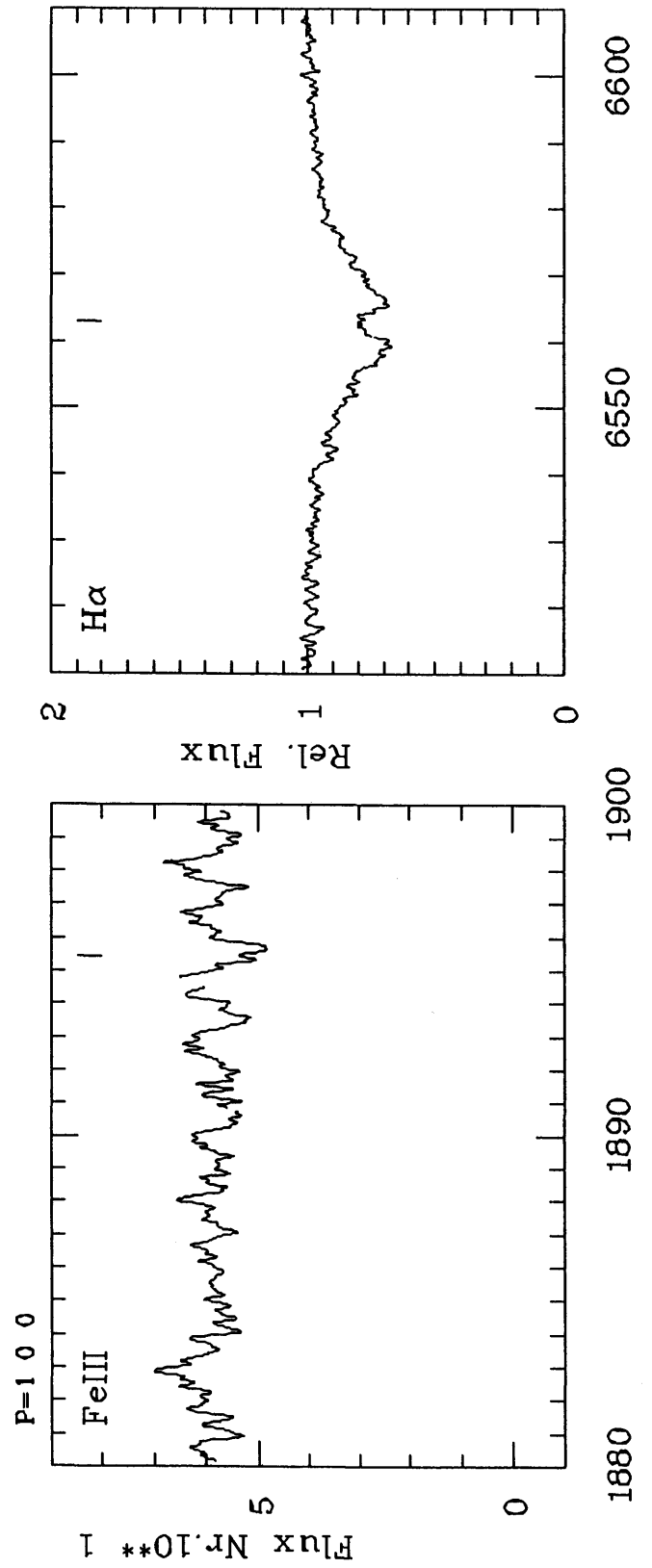
IUE 3 20434 L 83.07.10

OHP R GA7858

87.11.29

HD 24479 B9IVe

vsini 100



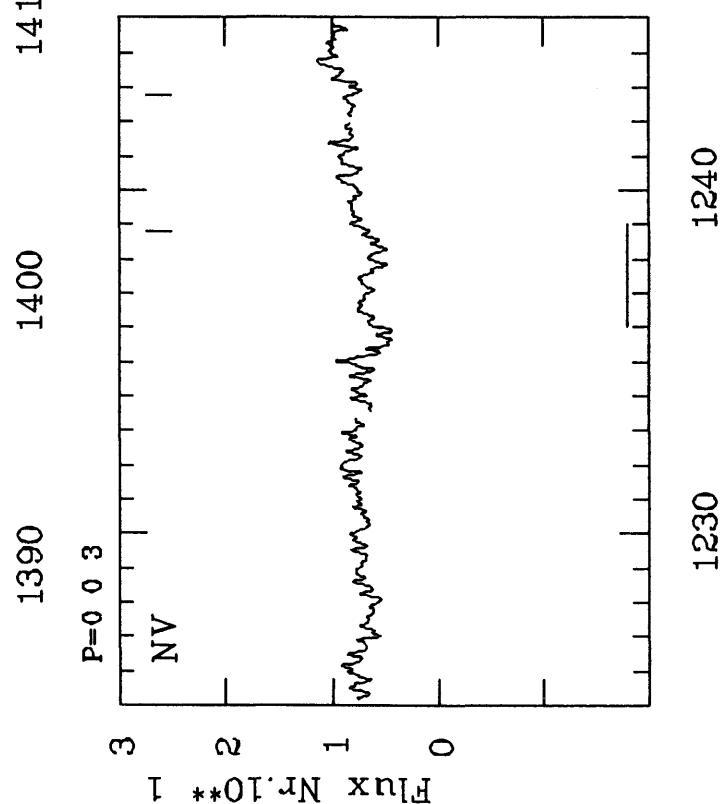
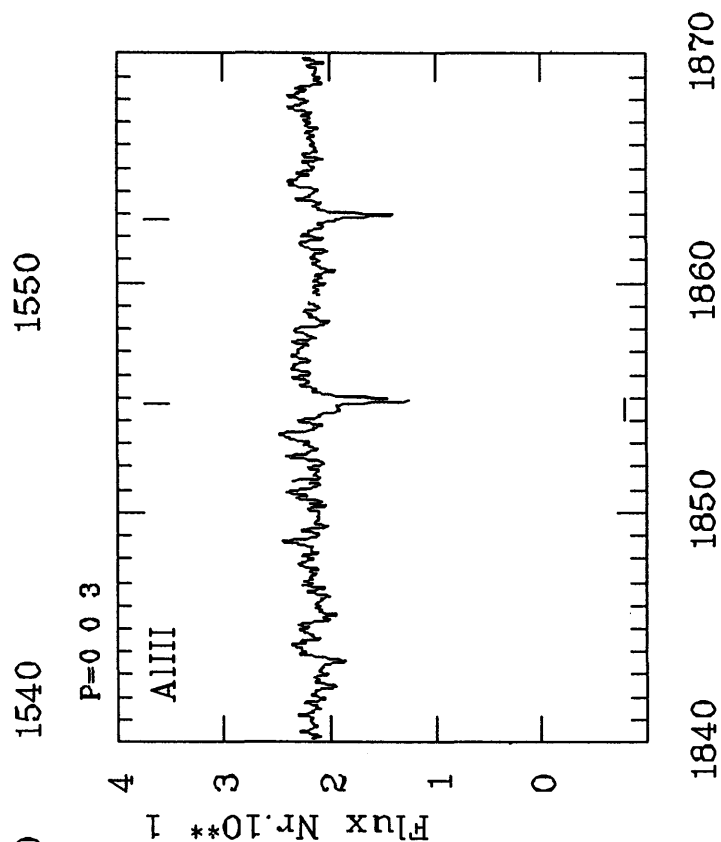
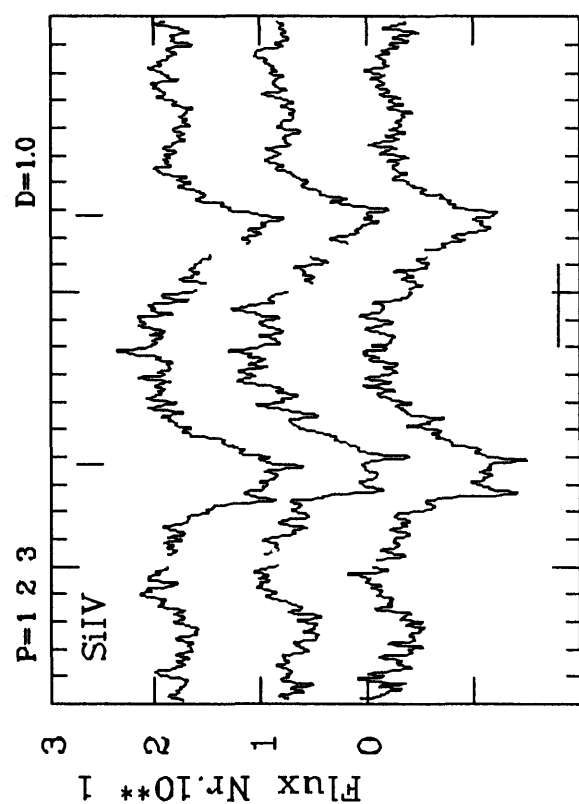
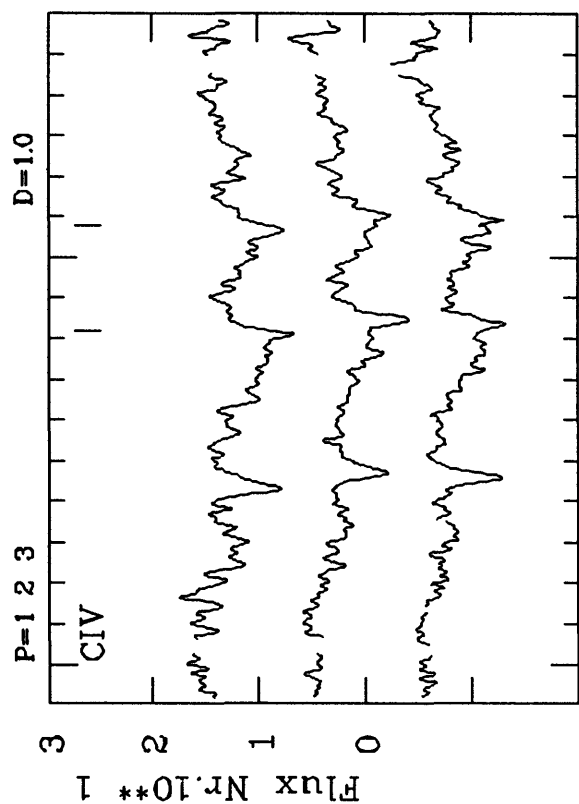
IUE 3 20434 L 83.07.10

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OHP R GA7858 87.11.29

HD 24534 09.5IIIe

vsini 200



IVE 3 02082 L 78.07.22 - 3 07483 L 79.12.23 - 3 08588 L 80.03.29

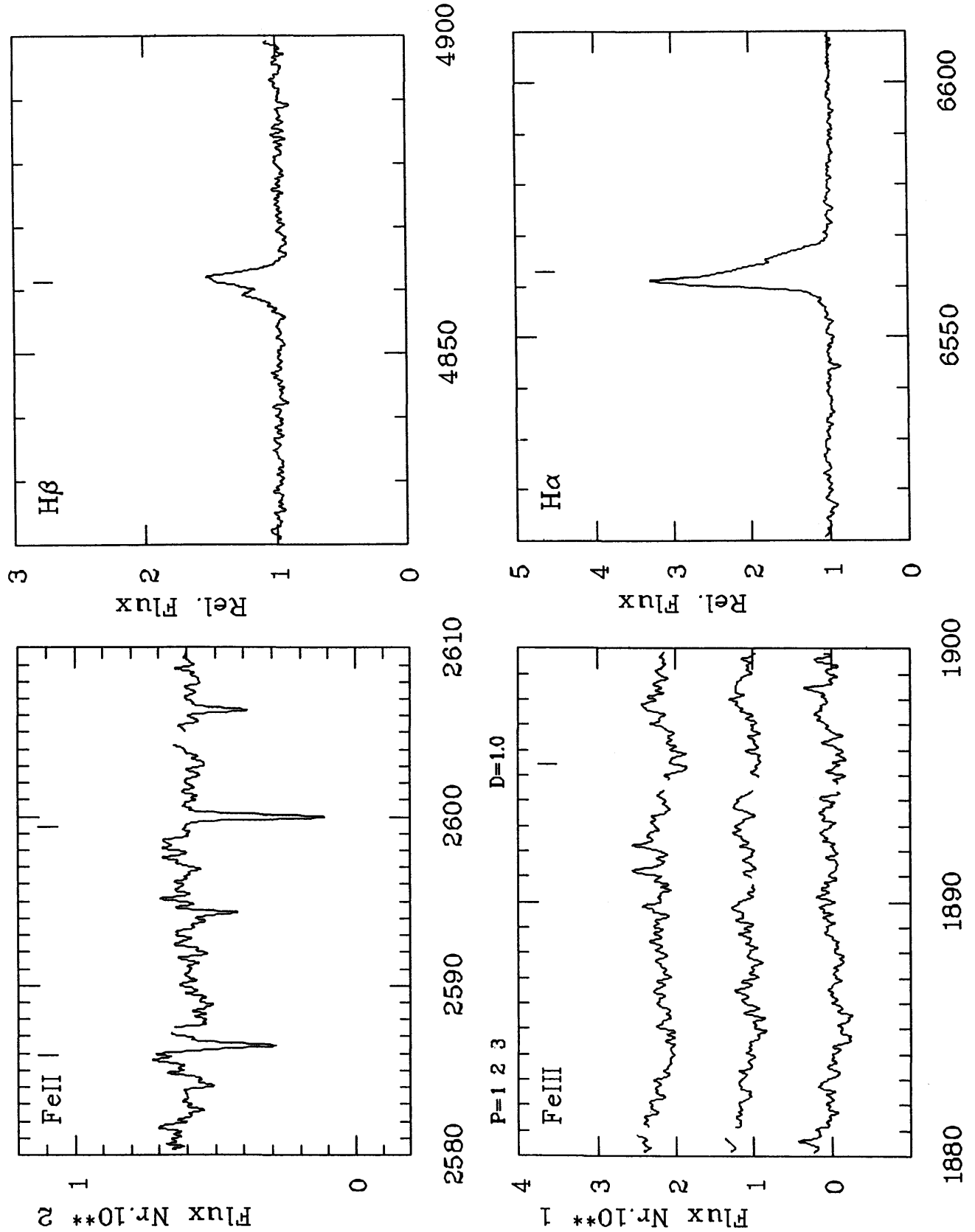
IVE 2 07254 L 80.03.20

OHP B GB6767 81.10.11

OHP R GA4986 81.10.11

HD 24534 09.5IIIe

vsini 200



IUE 3 02082 L 78.07.22 - 3 07483 L 79.12.23 - 3 08588 L 80.03.29

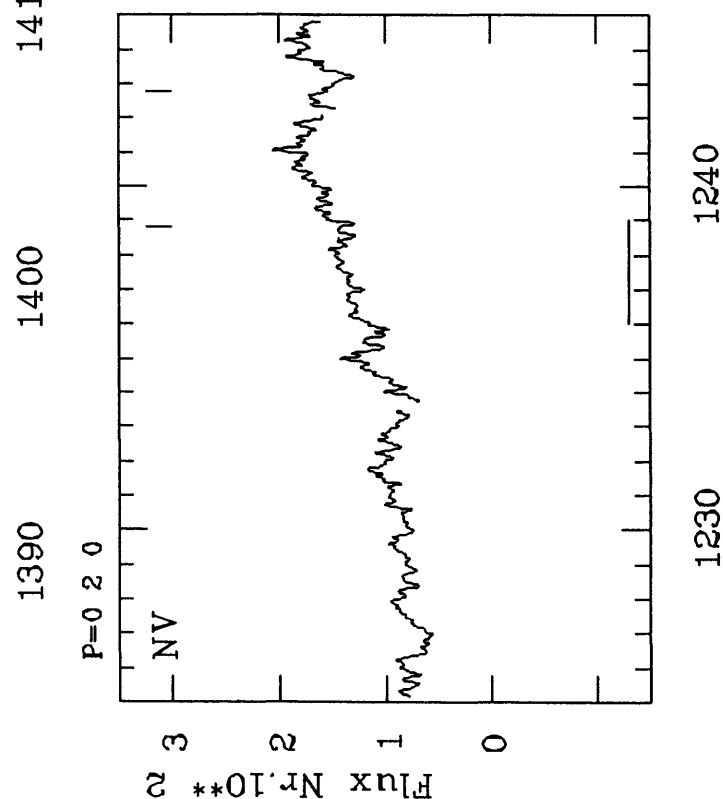
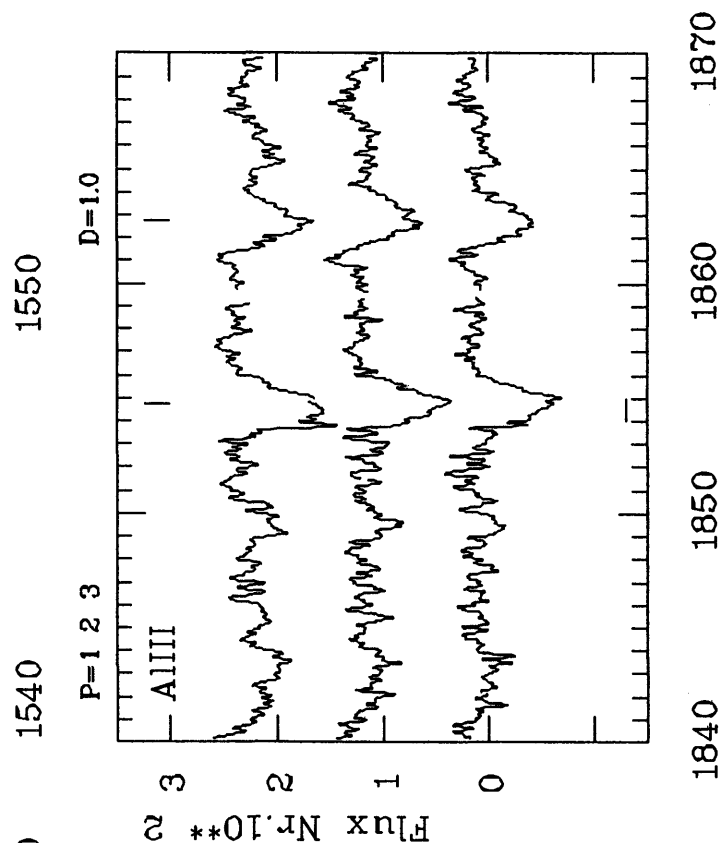
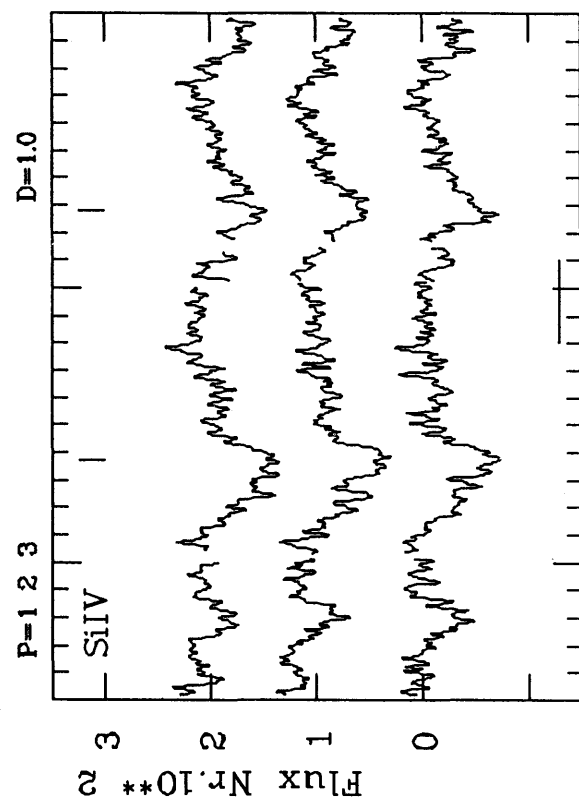
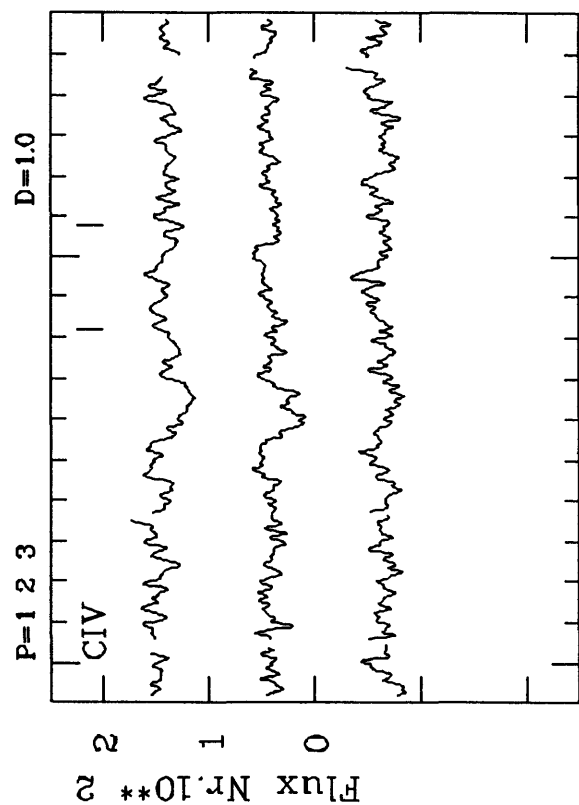
IUE 2 07254 L 80.03.20

OHP B GB6767 81.10.11

OHP R GA4986 81.10.11

HD 25940 B4Ve

vsini 200



IUE 3 07011 L 79.10.27 - 3 24051 L 84.09.22 - 3 29271 L 86.09.21

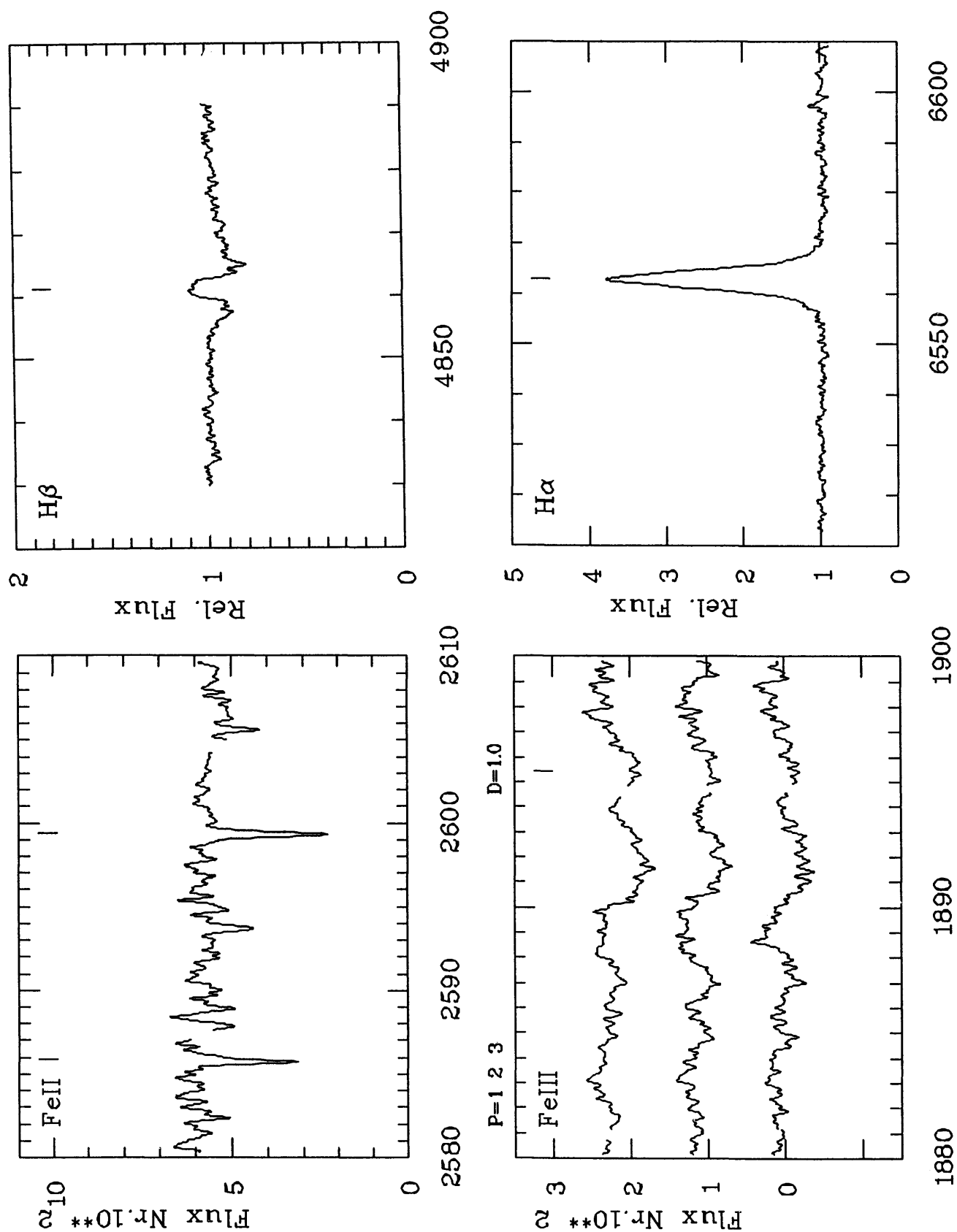
IUE 2 05950 L 79.10.27

OHP B W6521 77.11.26

OHP R W6522 77.11.26

HD 25940 B4Ve

vsini 200



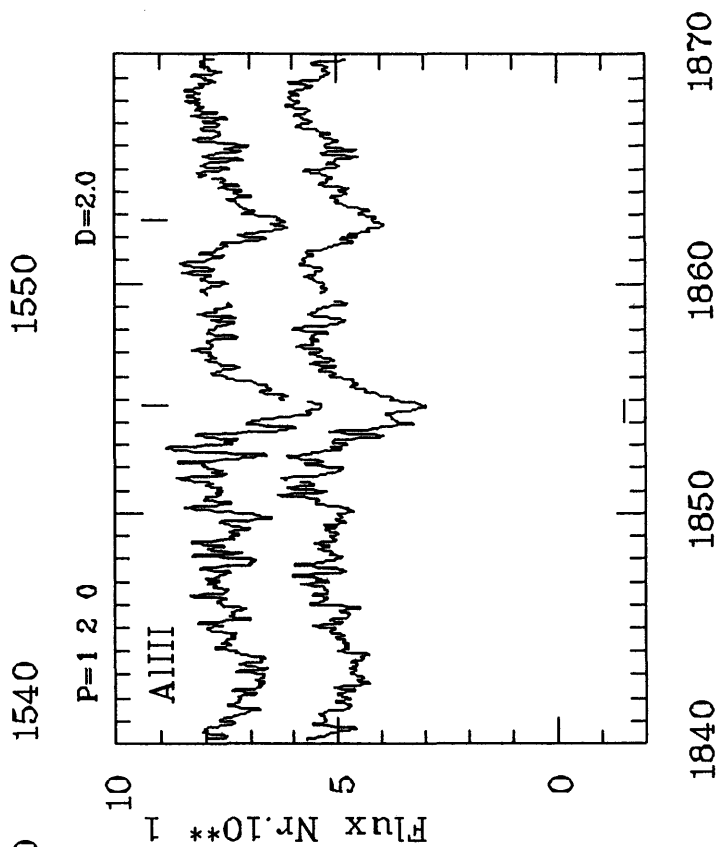
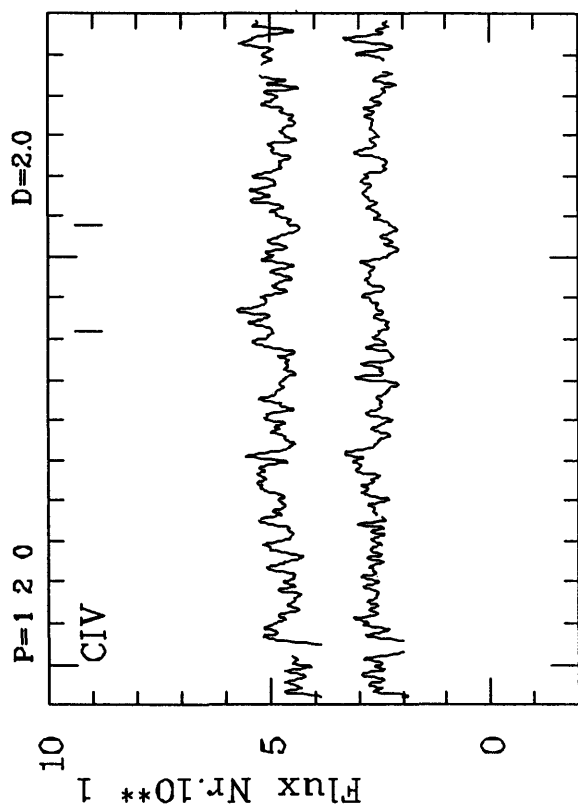
IUE 3 07011 L 79.10.27 - 3 24051 L 84.09.22 - 3 29271 L 86.09.21
 IUE 2 05950 L 79.10.27

OHP B W6521 77.11.26

HD R W6522 77.11.26

HD 26356 B5Ve

vsini 250

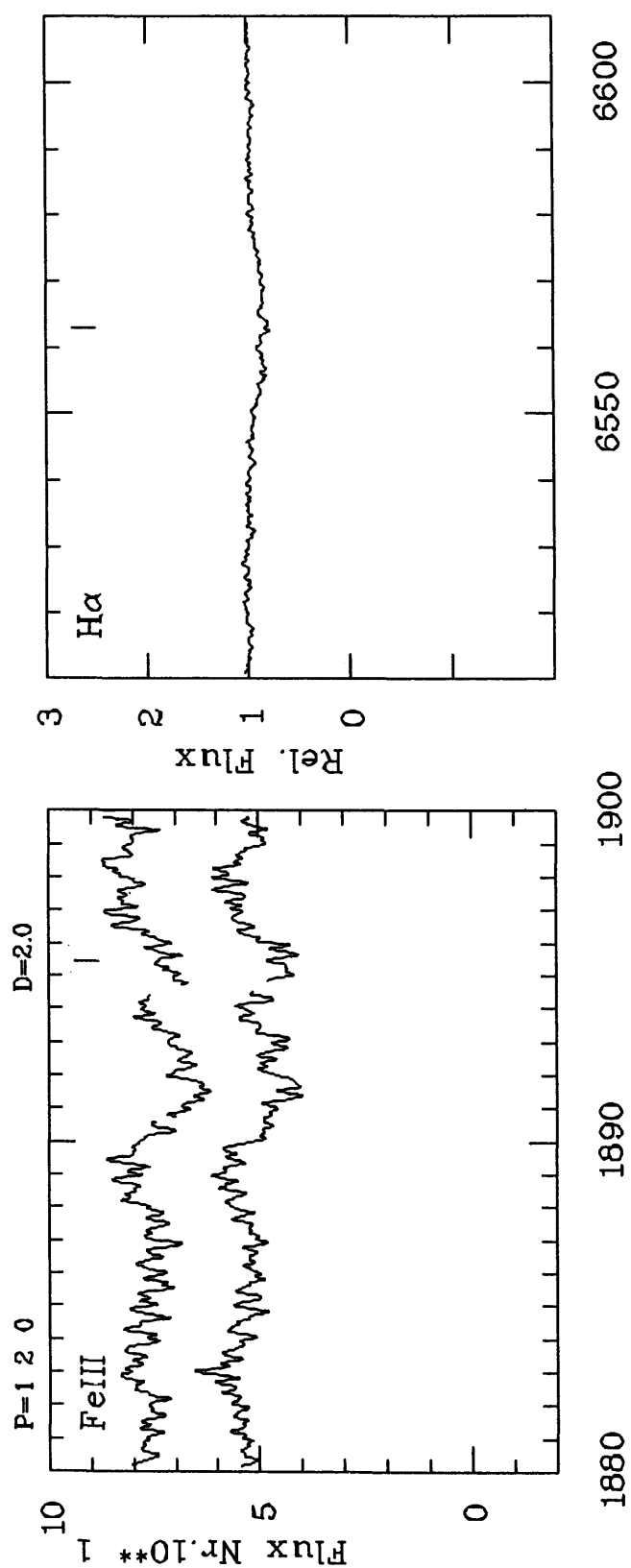


IUE 3 19933 L 83.05.08 - 3 29400 L 86.10.08

HD 26356

B5Ve

vsini 250



IUE 3 19933 L 83.05.08 - 3 29400 L 86.10.08

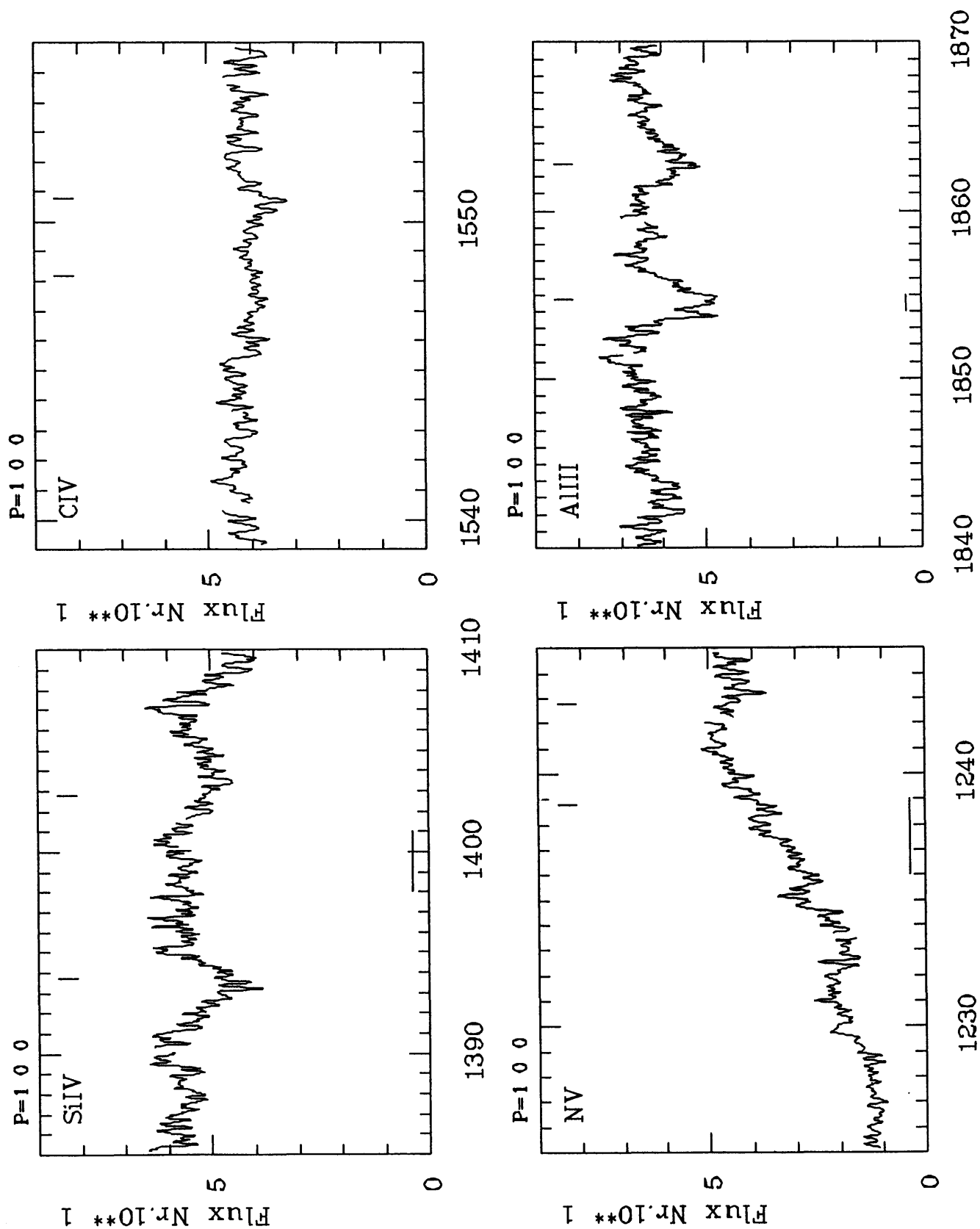
-
-

OHP R GA7853

87.11.28

HD 26670 B6Ve

vsini 280



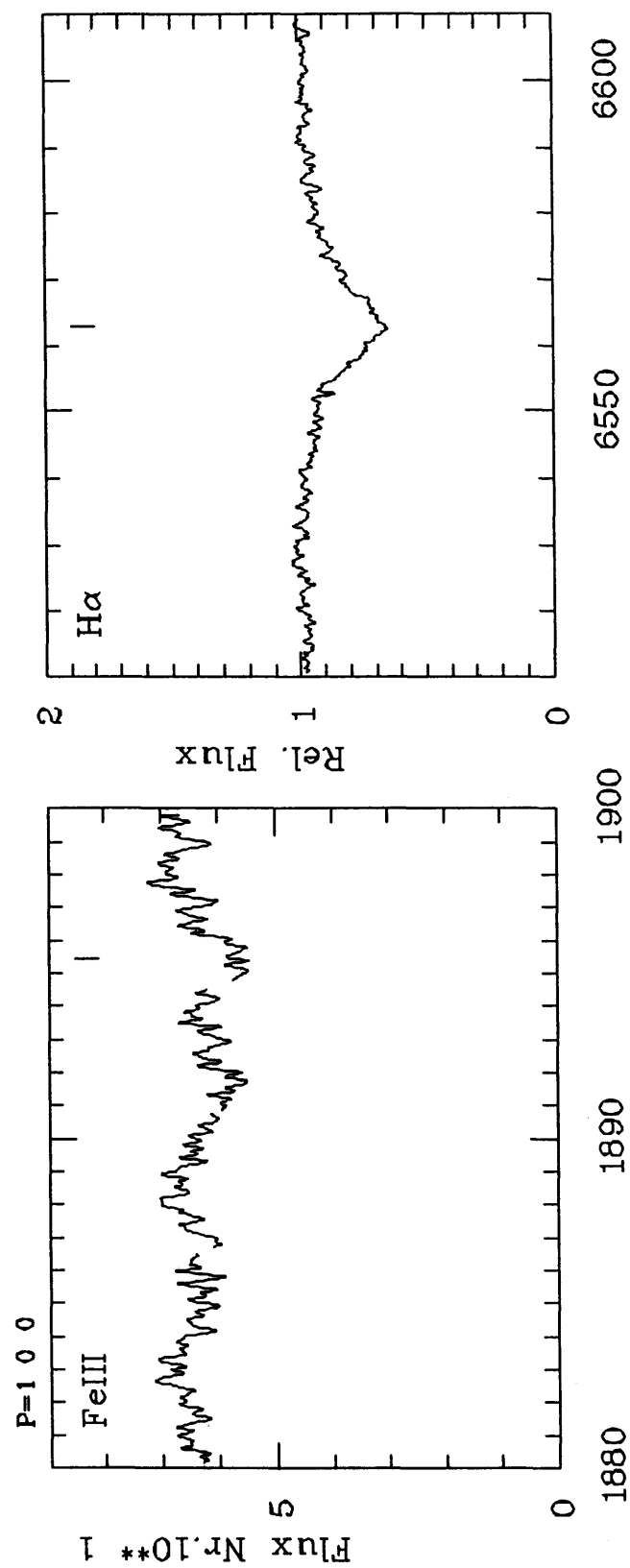
IUE 3 20435 L 83.07.10

OHP R GA7857

87.11.29

HD 26670 B6Ve

vsini 280



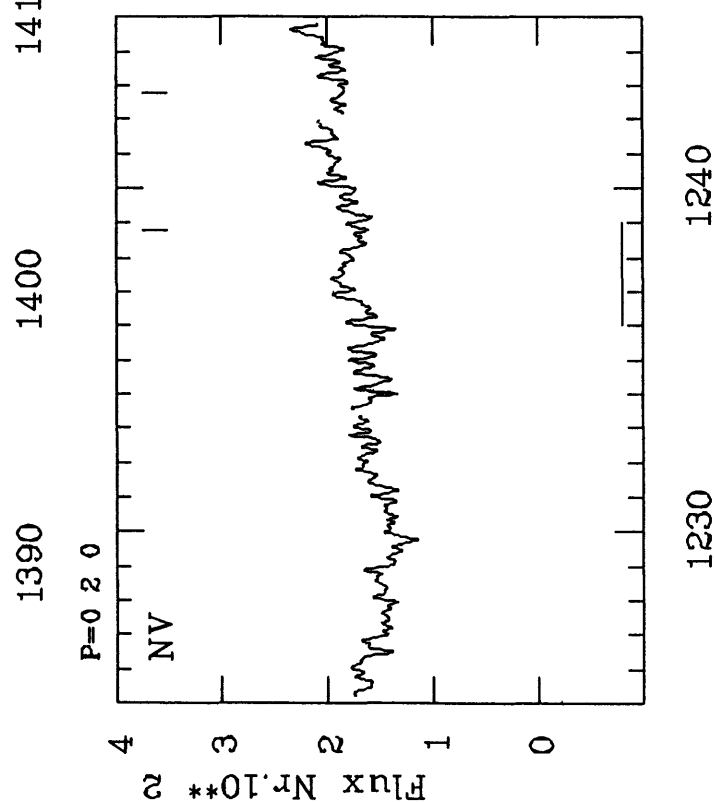
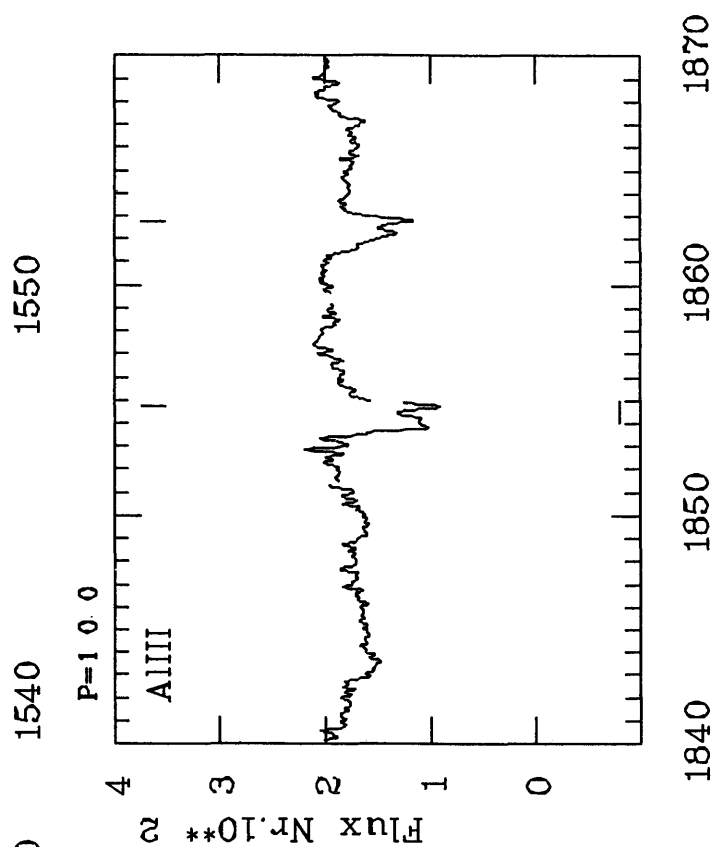
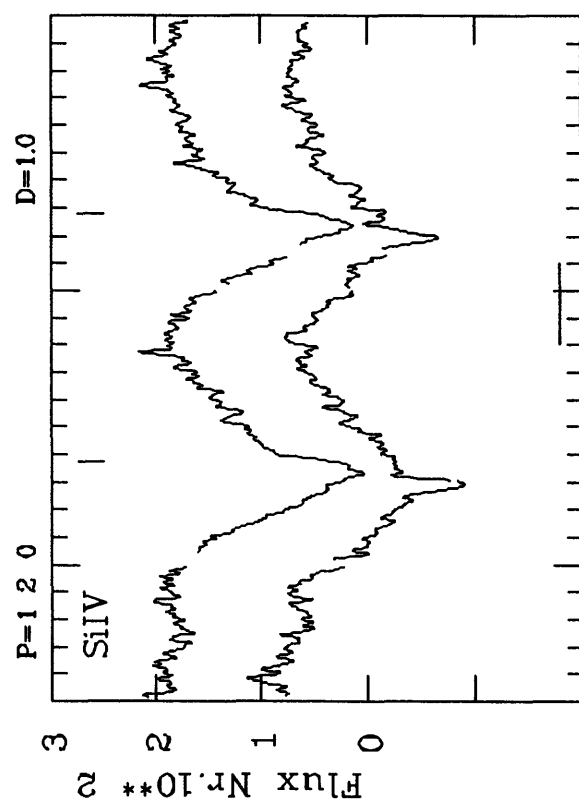
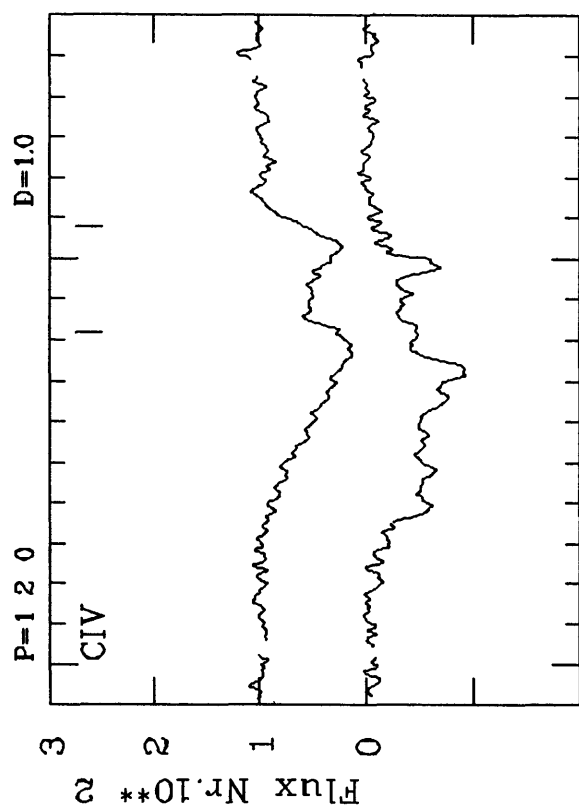
IUE 3 20435 L 83.07.10

-
-

OHP R GA7857 87.11.29

HD 28497 B1Ve

vsini 230



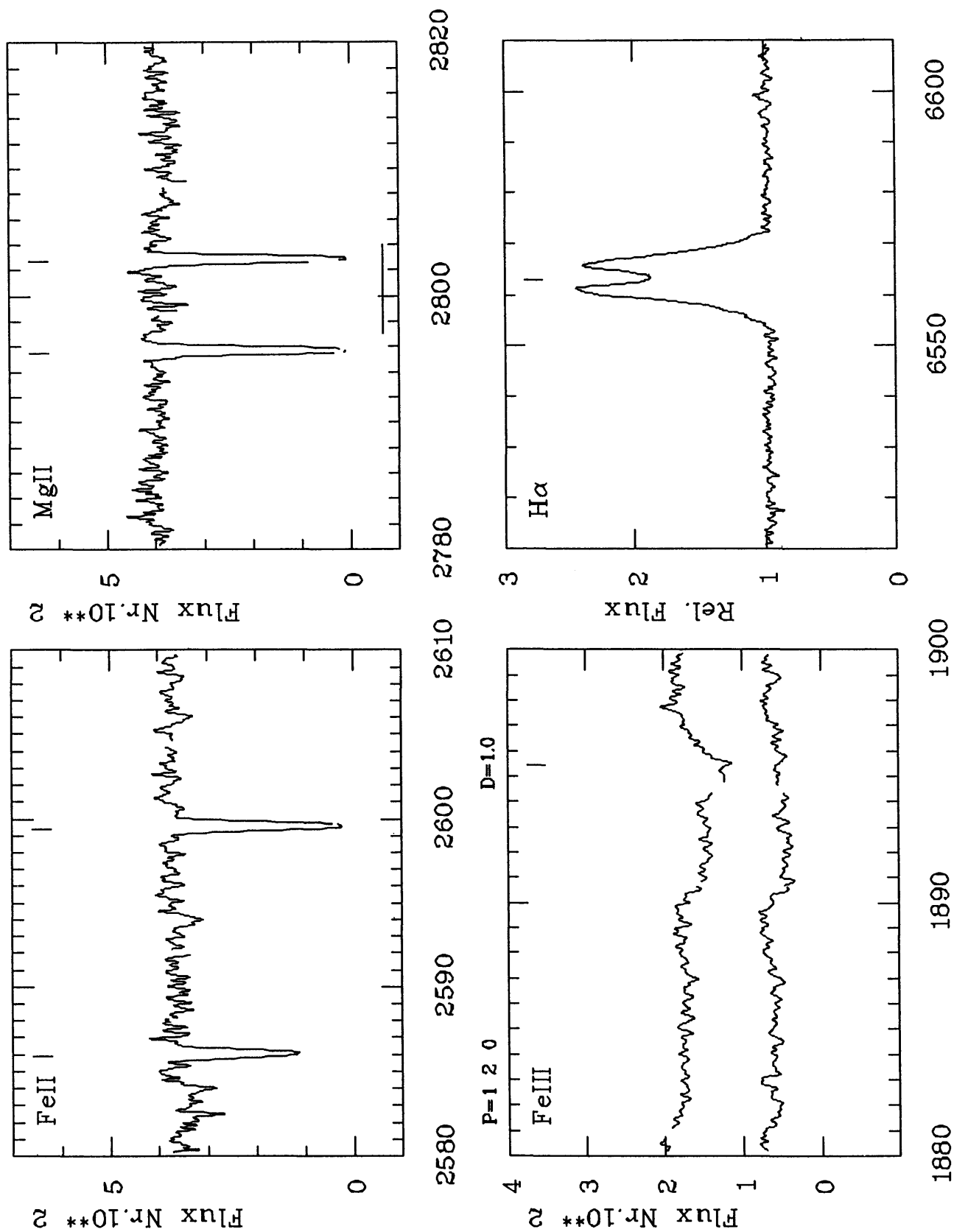
IUE 3 08594 L 80.03.29 - 3 18944 L 83.01.05

IUE 2 14994 L 83.01.05

ESO R G13864 88.10.27

HD 28497 B1Ve

vsini 230

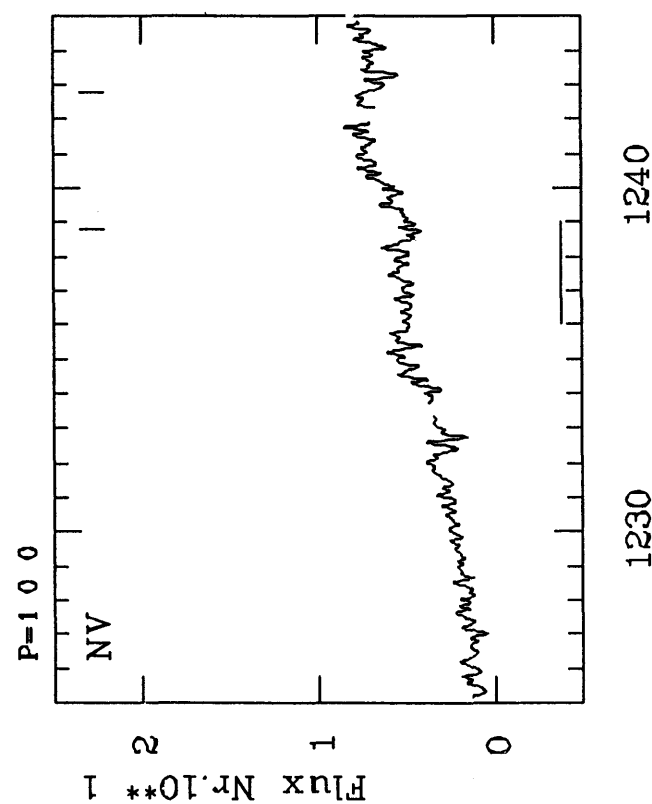
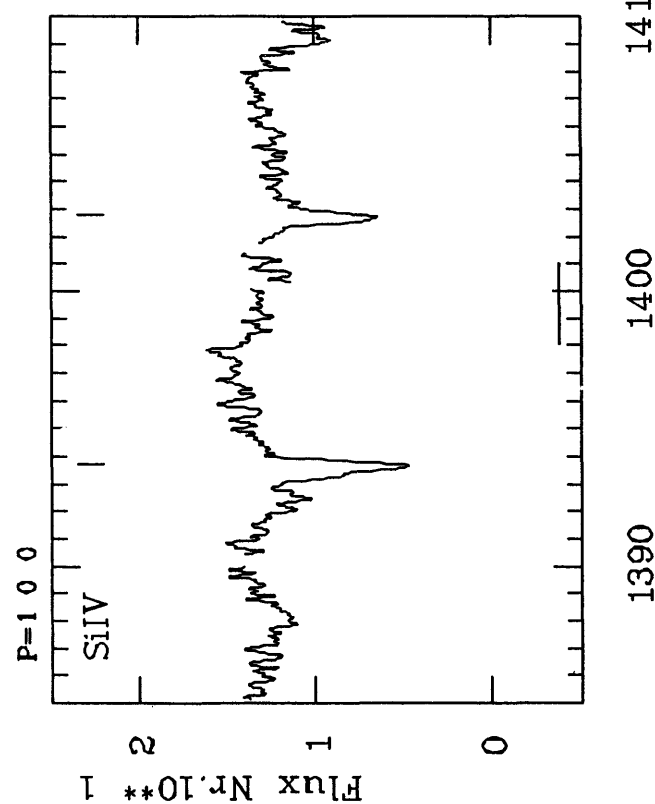
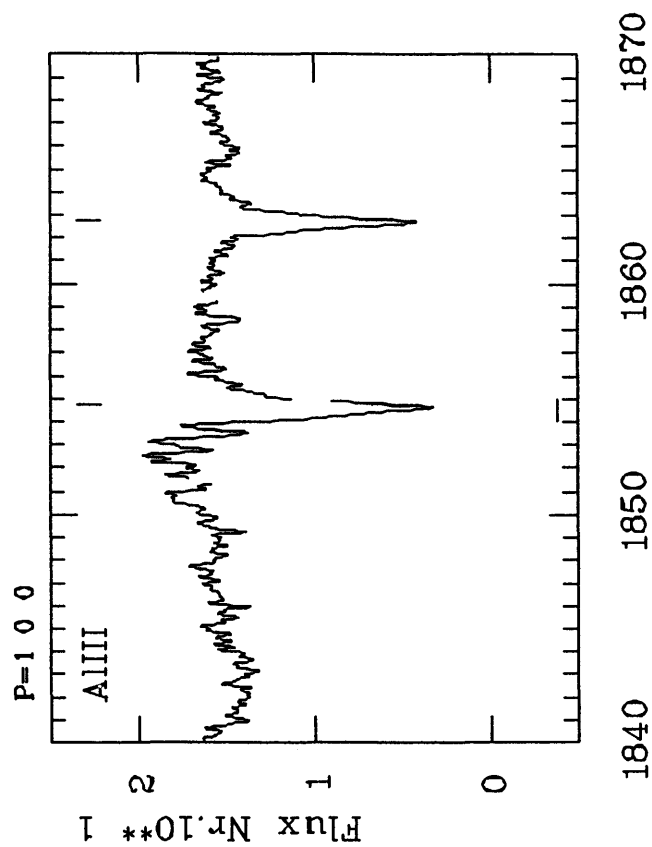
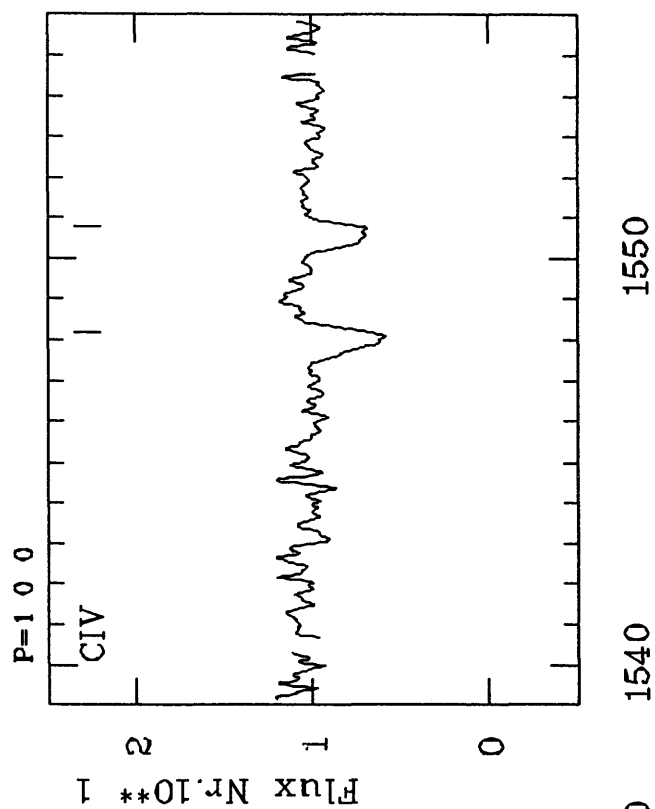


IUE 3 08594 L 80.03.29 - 3 18944 L 83.01.05
IUE 2 14994 L 83.01.05

ESO R G13864 88.10.27

HD 29866 B8IVne

vsini 300

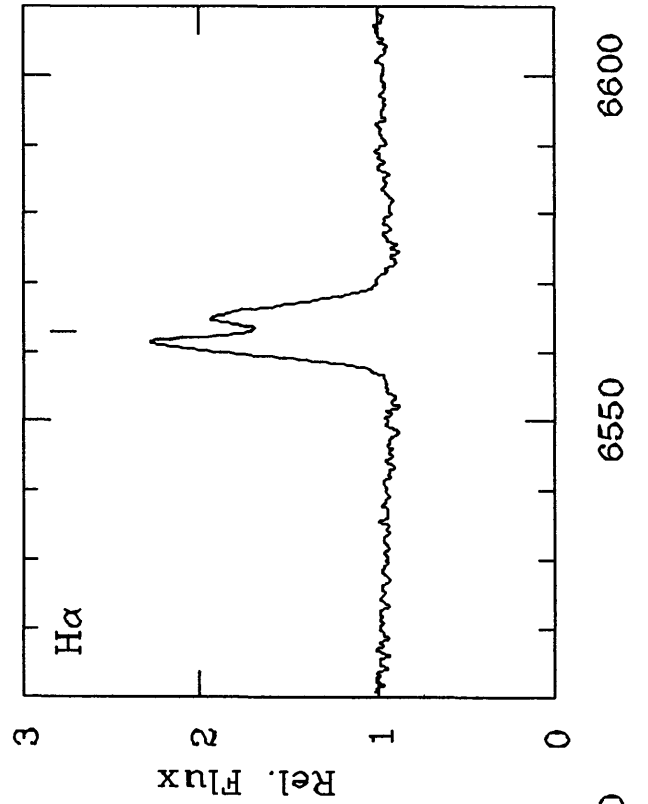
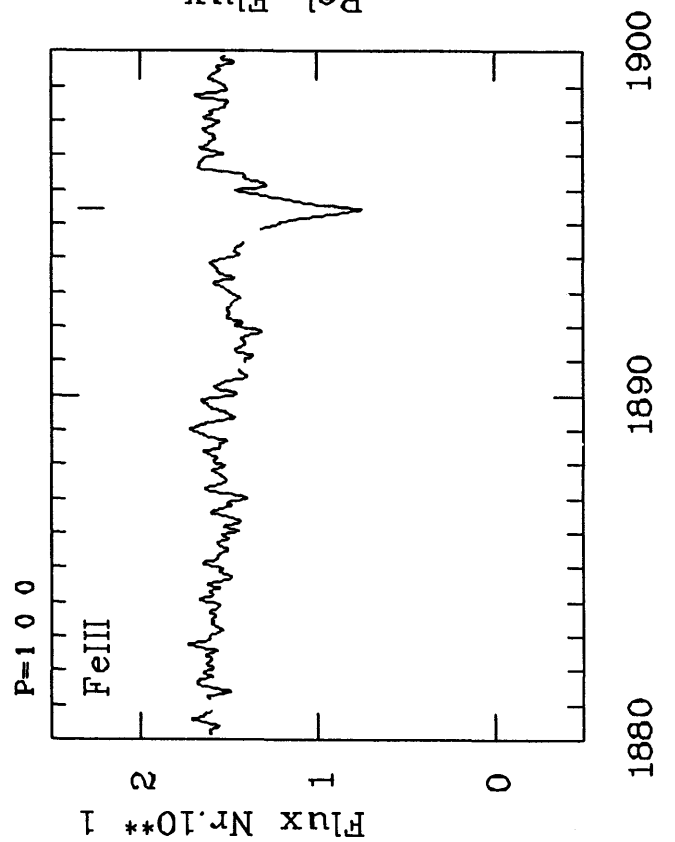
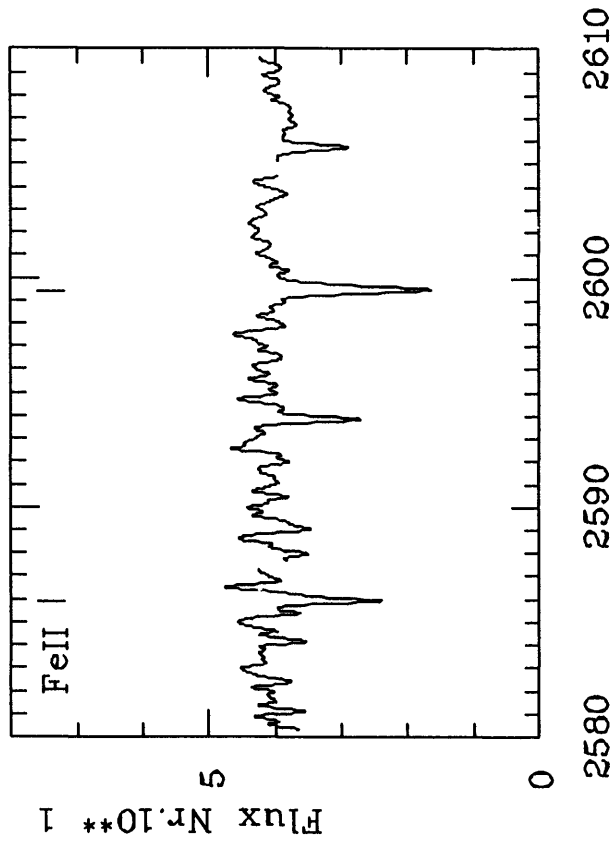


IUE 3 10047 L 80.09.07
 IUE 2 08745 L 80.09.07

OHP R GA7903 88.01.25

HD 29866 B8IVne

vsini 300

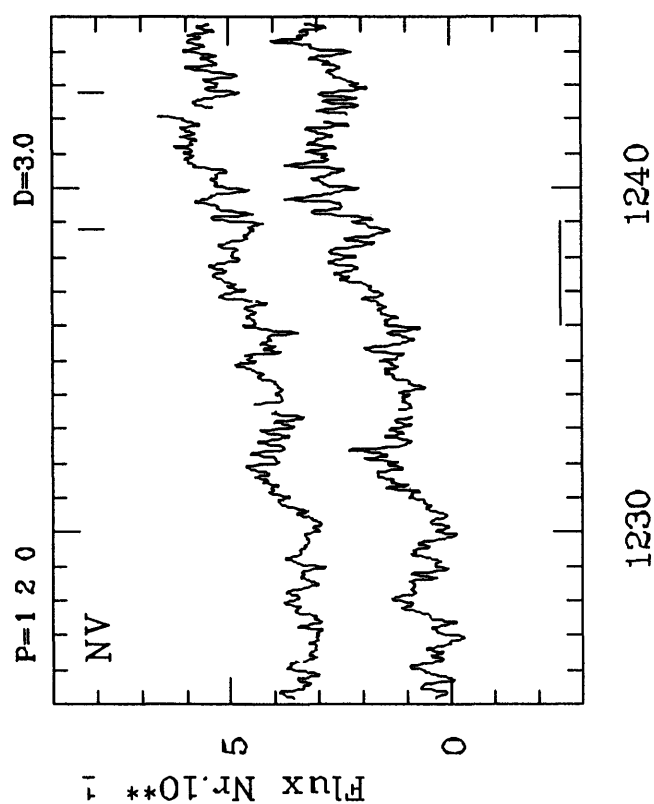
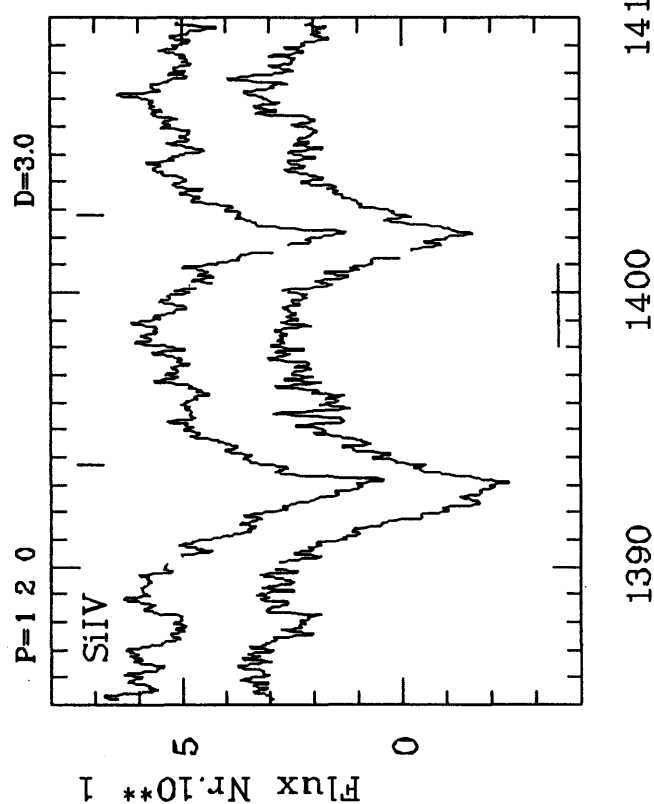
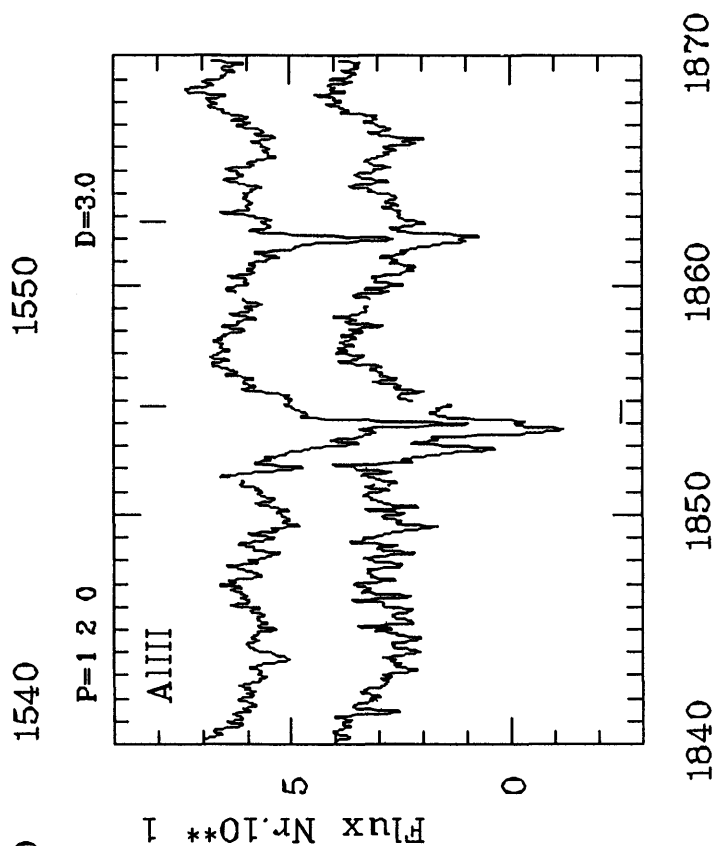
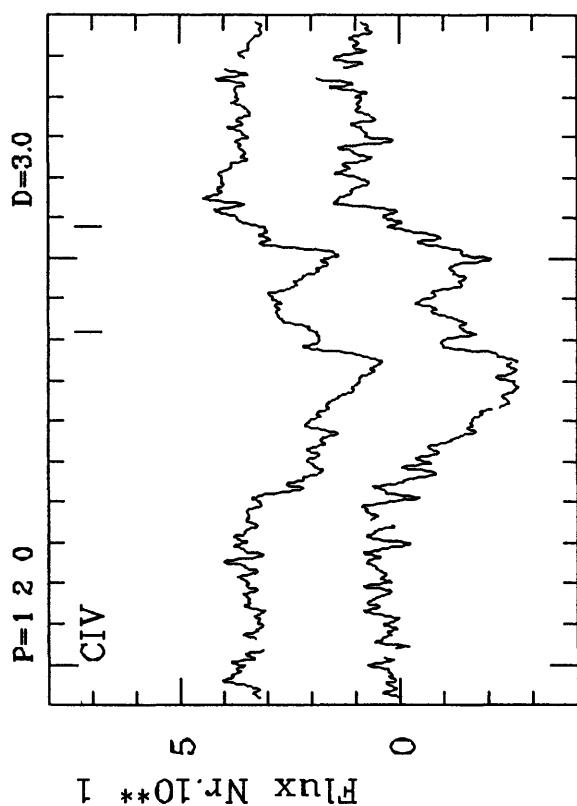


IE 3 10047 L 80.09.07
IE 2 08745 L 80.09.07

OHP R GA7903 88.01.25

HD 30076 B2Ve

vsini 180

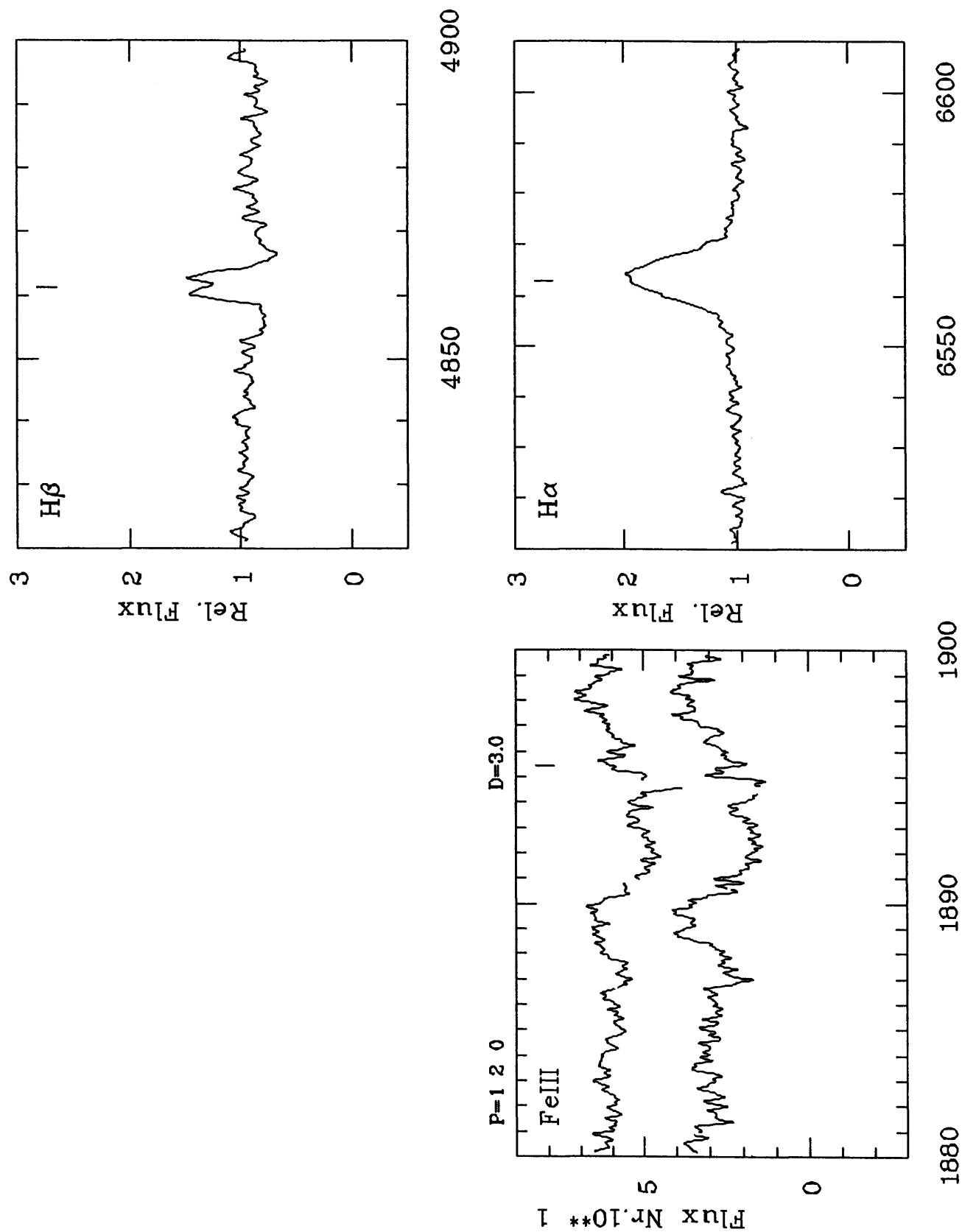


IUE 3 20844 L 83.08.30 - 3 27460 L 86.01.06

OHP B GA3046 77.03.03
 OHP R GA3036 77.03.01

HD 30076 B2Ve

vsini 180



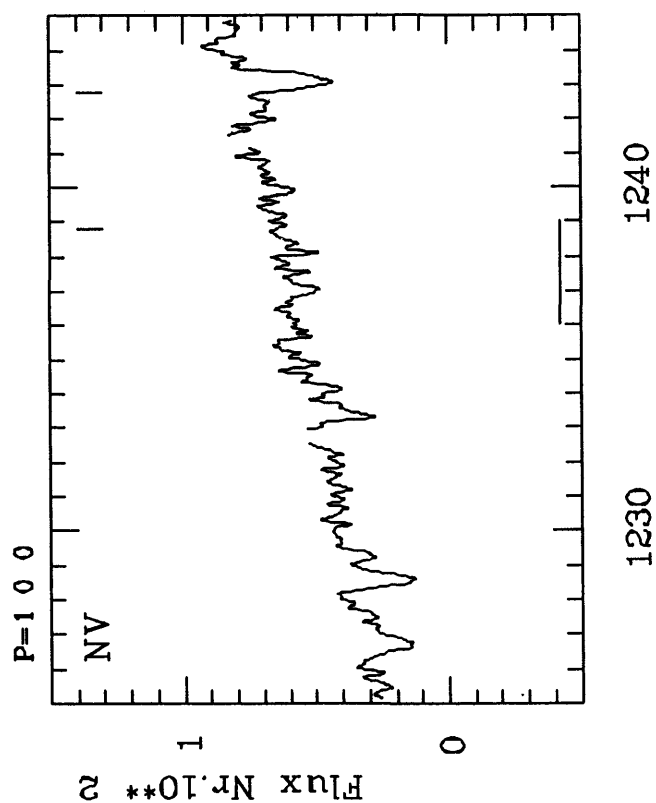
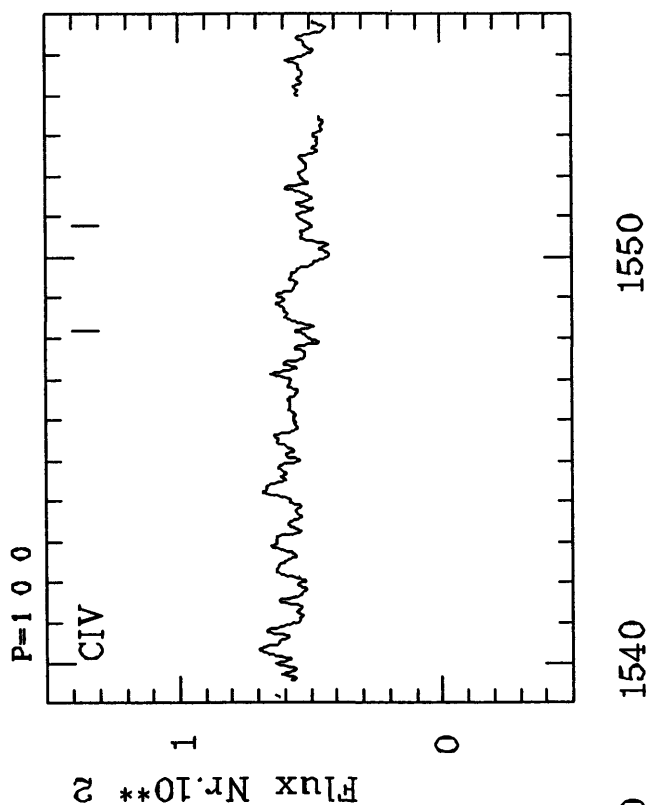
IUE 3 20844 L 83.08.30 - 3 27460 L 86.01.06

OHP B GA3046 77.03.03

OHP R GA3036 77.03.01

HD 32343 B3Ve

vsini 100



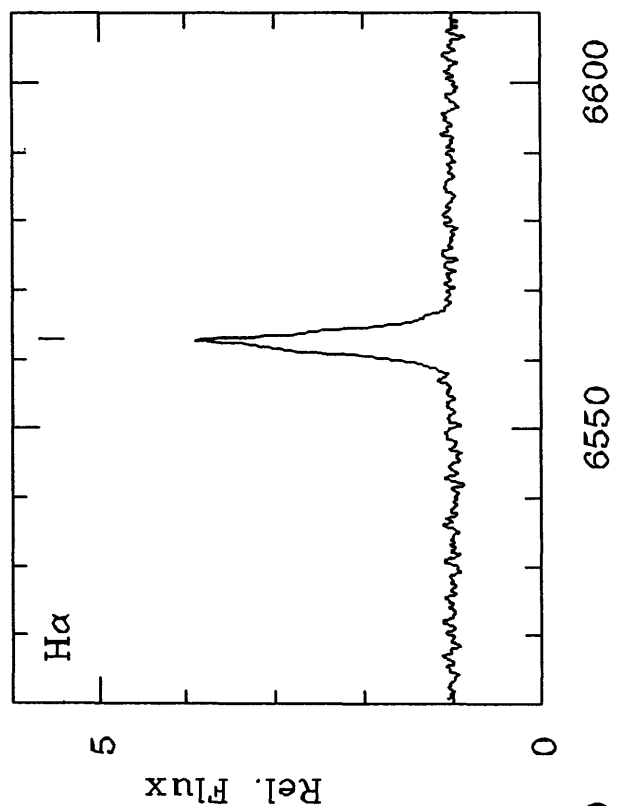
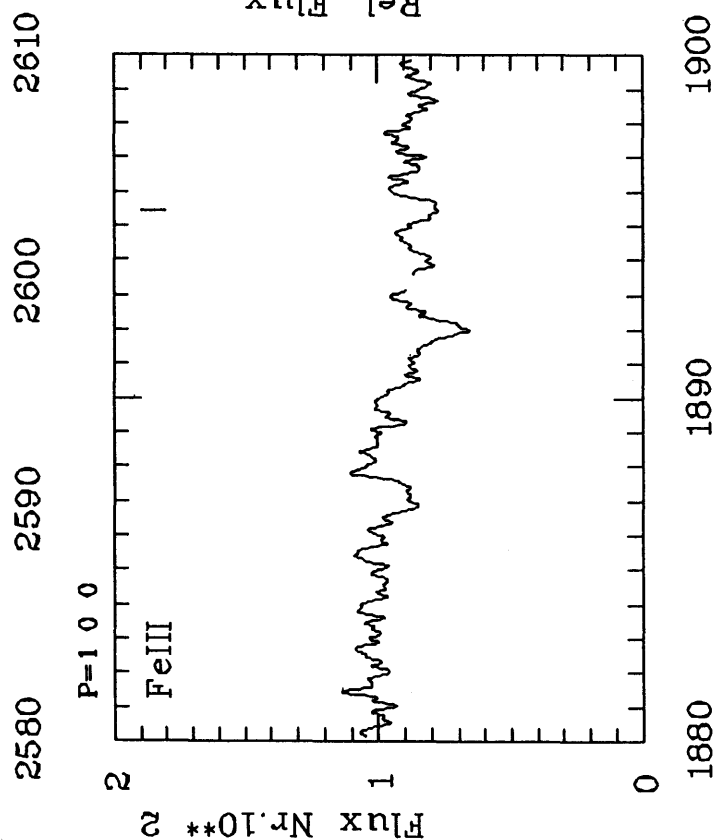
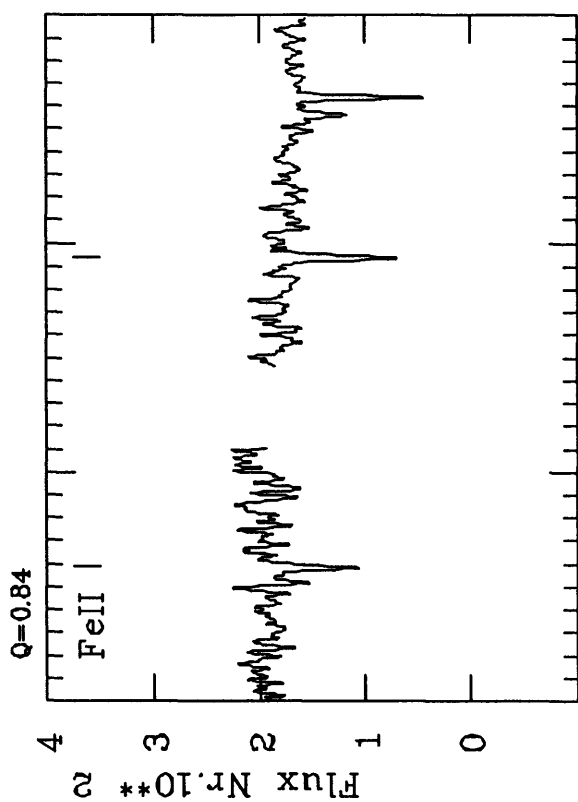
IUE 3 06932 S 79.10.20
 IUE 2 05890 S 79.10.20

OHP R GA3025 77.02.26

HD 32343 B3Ve

vsini 100

89

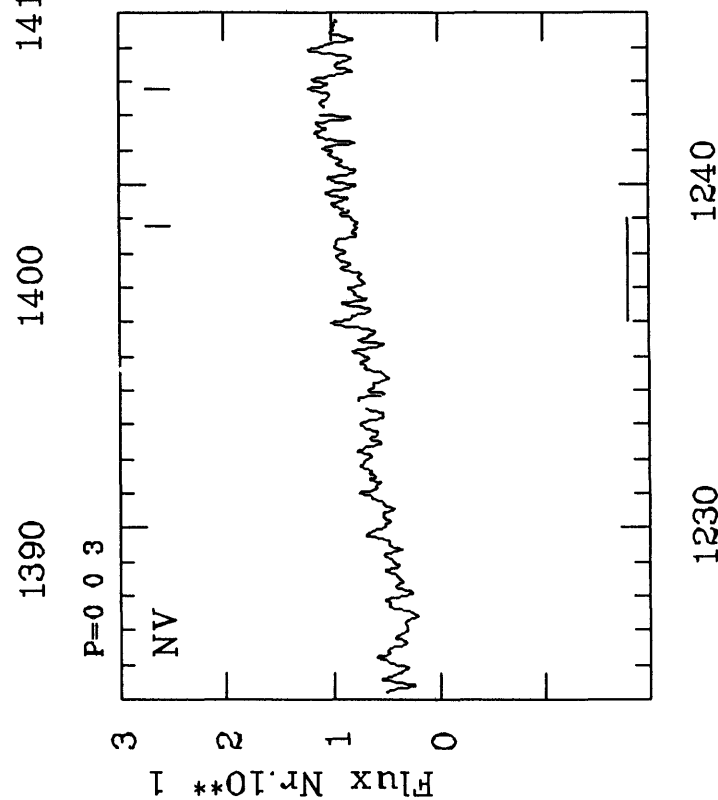
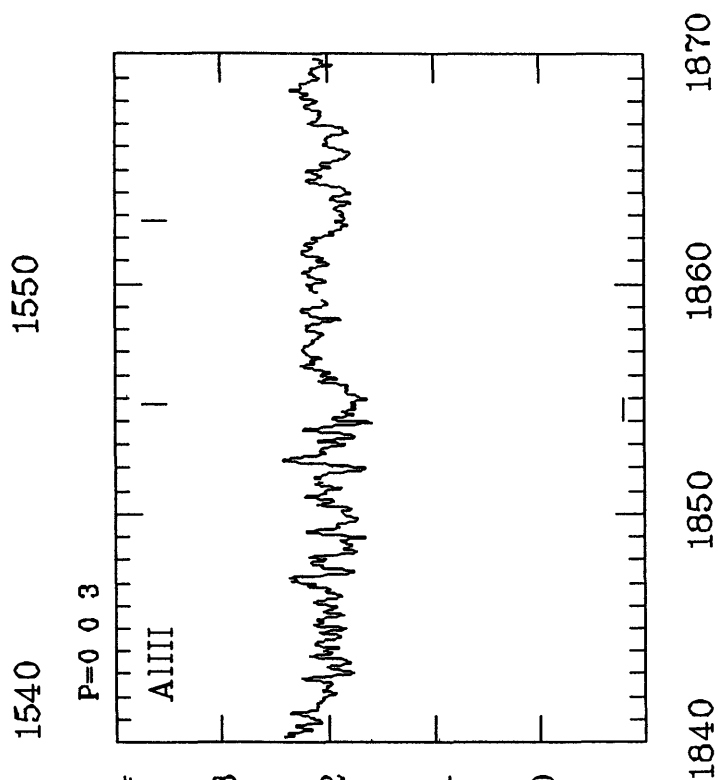
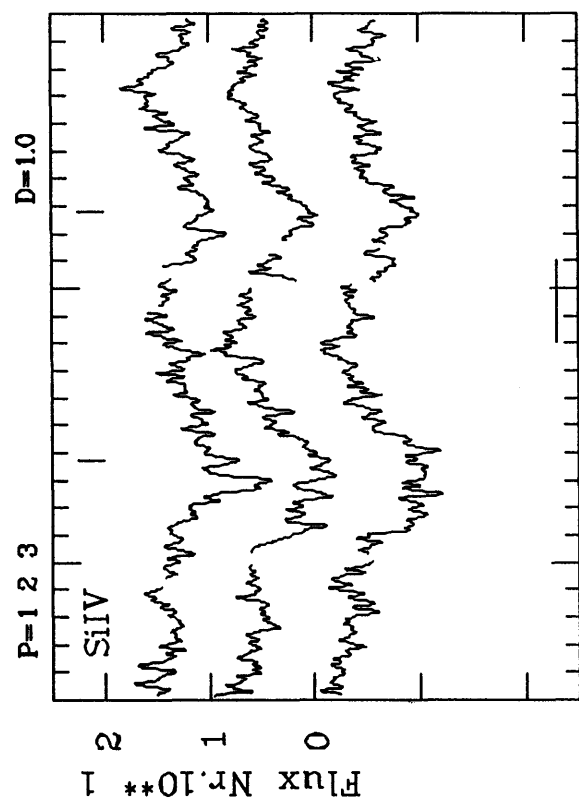
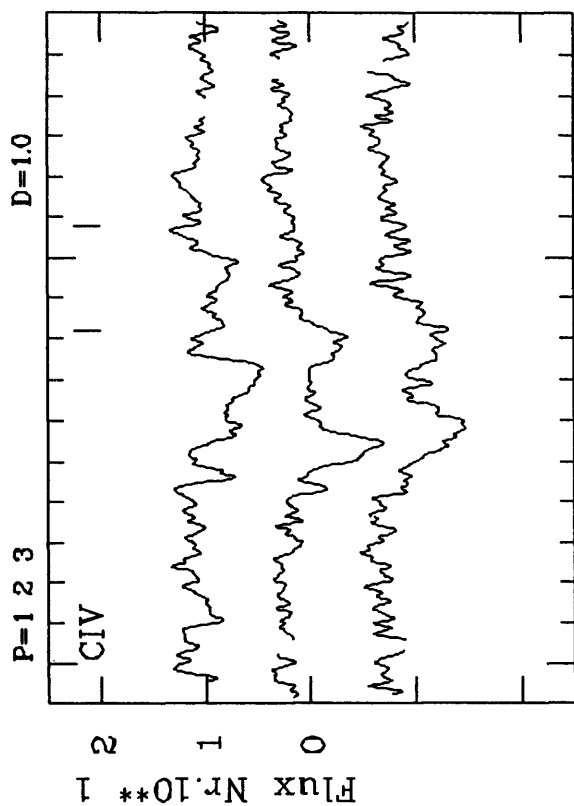


IUE 3 06932 S 79.10.20
IUE 2 05890 S 79.10.20

OHP R GA3025 77.02.26

HD 32991 B3Ve

vsini 200



IVE 3 04052 S 79.01.27 - 3 14840 L 81.08.28 - 3 21490 L 83.11.09

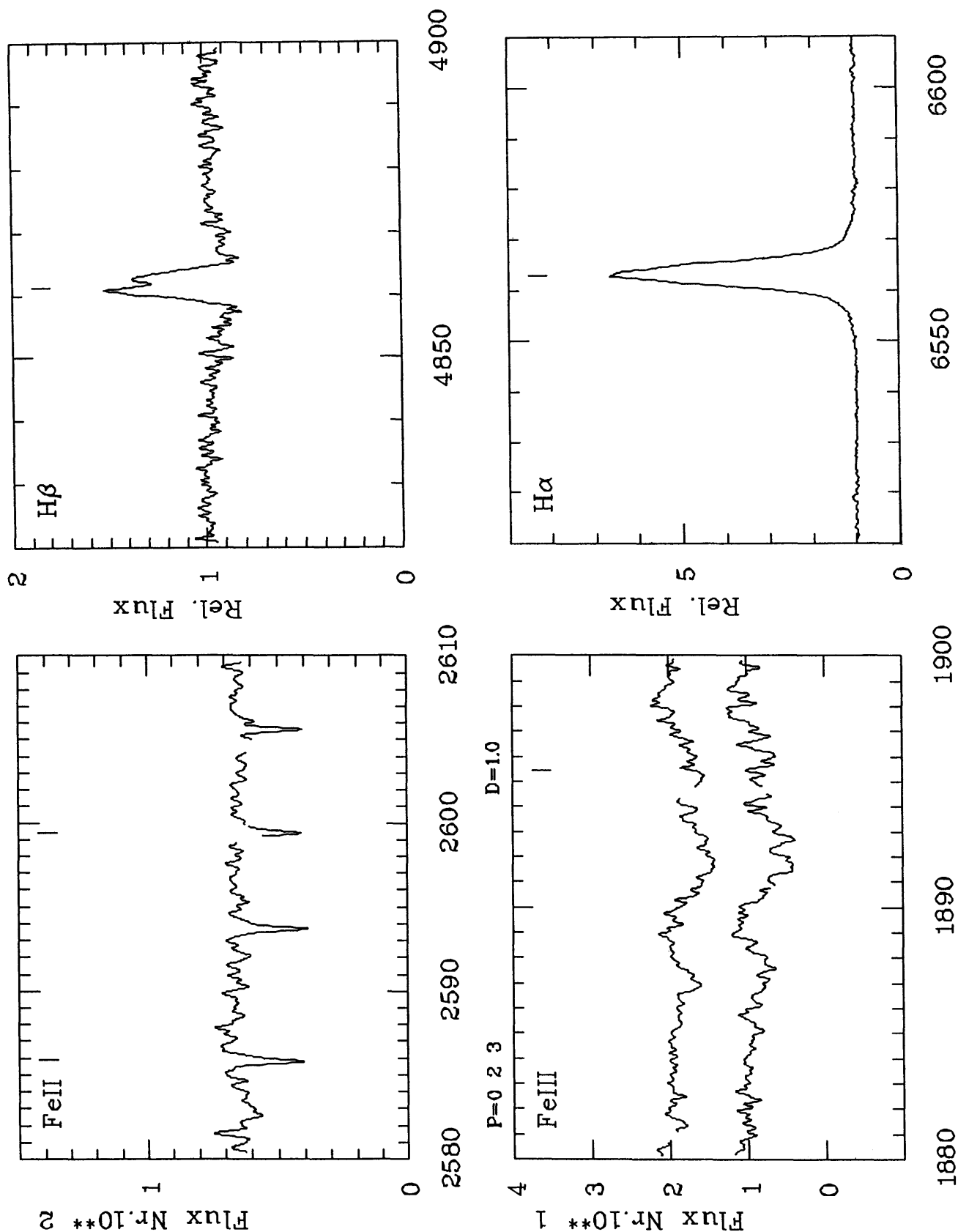
IVE 2 11426 L 81.03.28

OHP B GB8768 85.02.05

OHP R GA6182 85.02.03

HD 32991 B3Ve

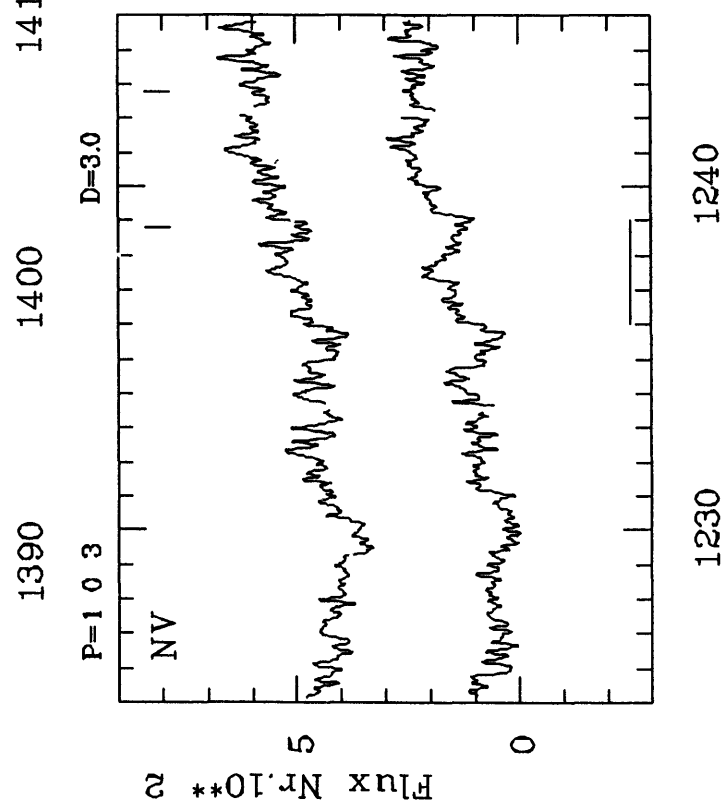
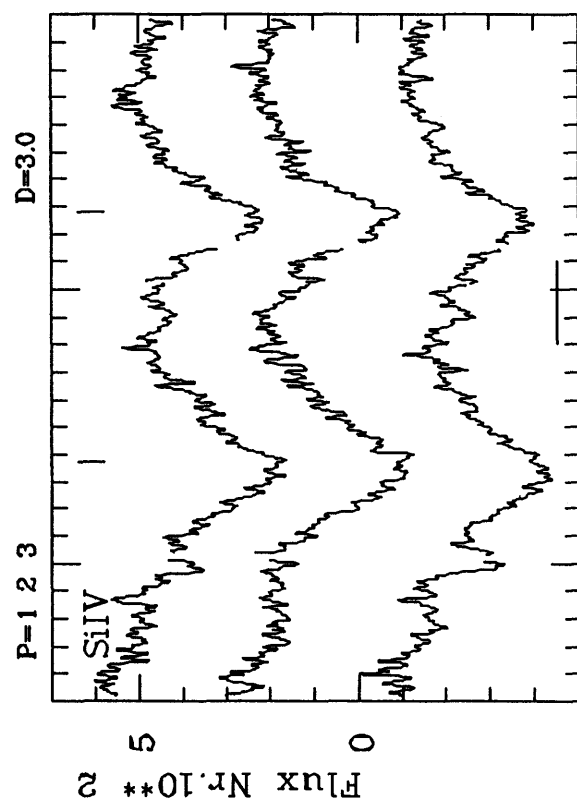
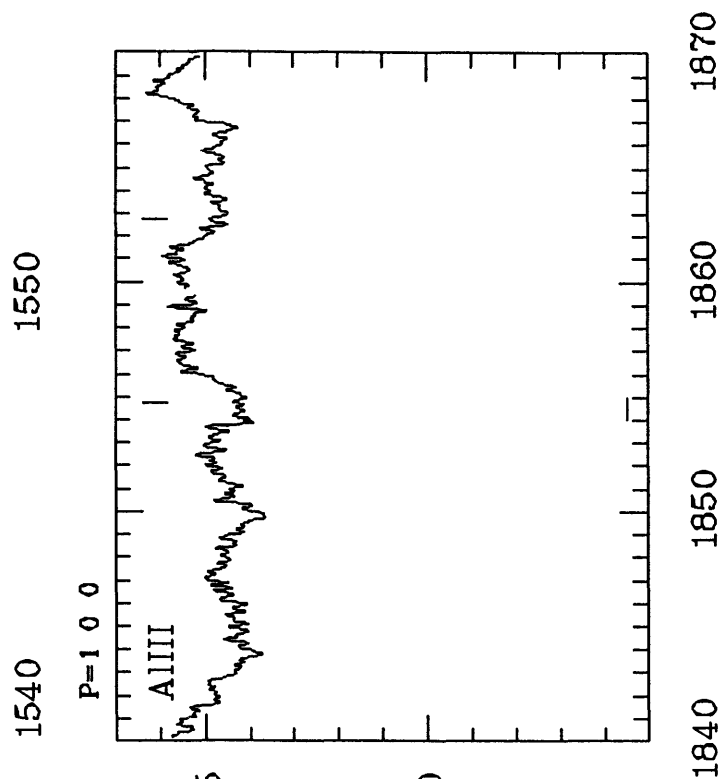
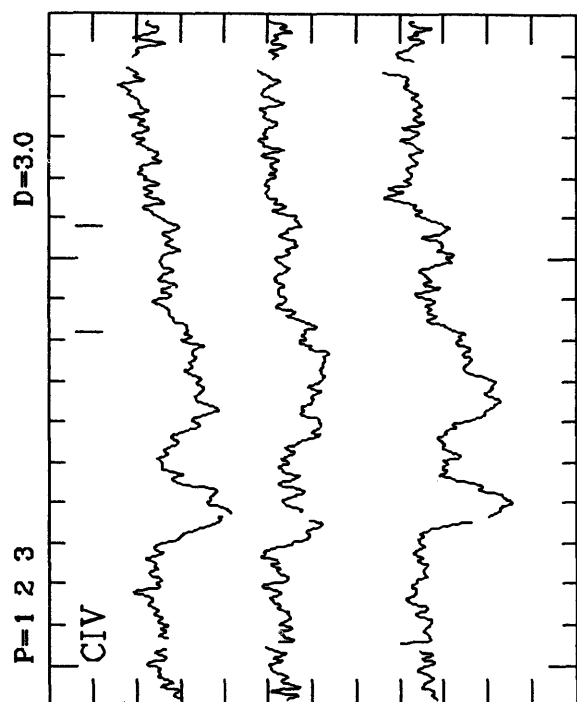
vsini 200



IUE 3 04052 S 79.01.27 - 3 14840 L 81.08.28 - 3 21490 L 83.11.09
 IUE 2 11426 L 81.08.28
 OHP B GB8768 85.02.05
 OHP R GA6182 85.02.03

HD 33328 B2IIIep

vsini 220

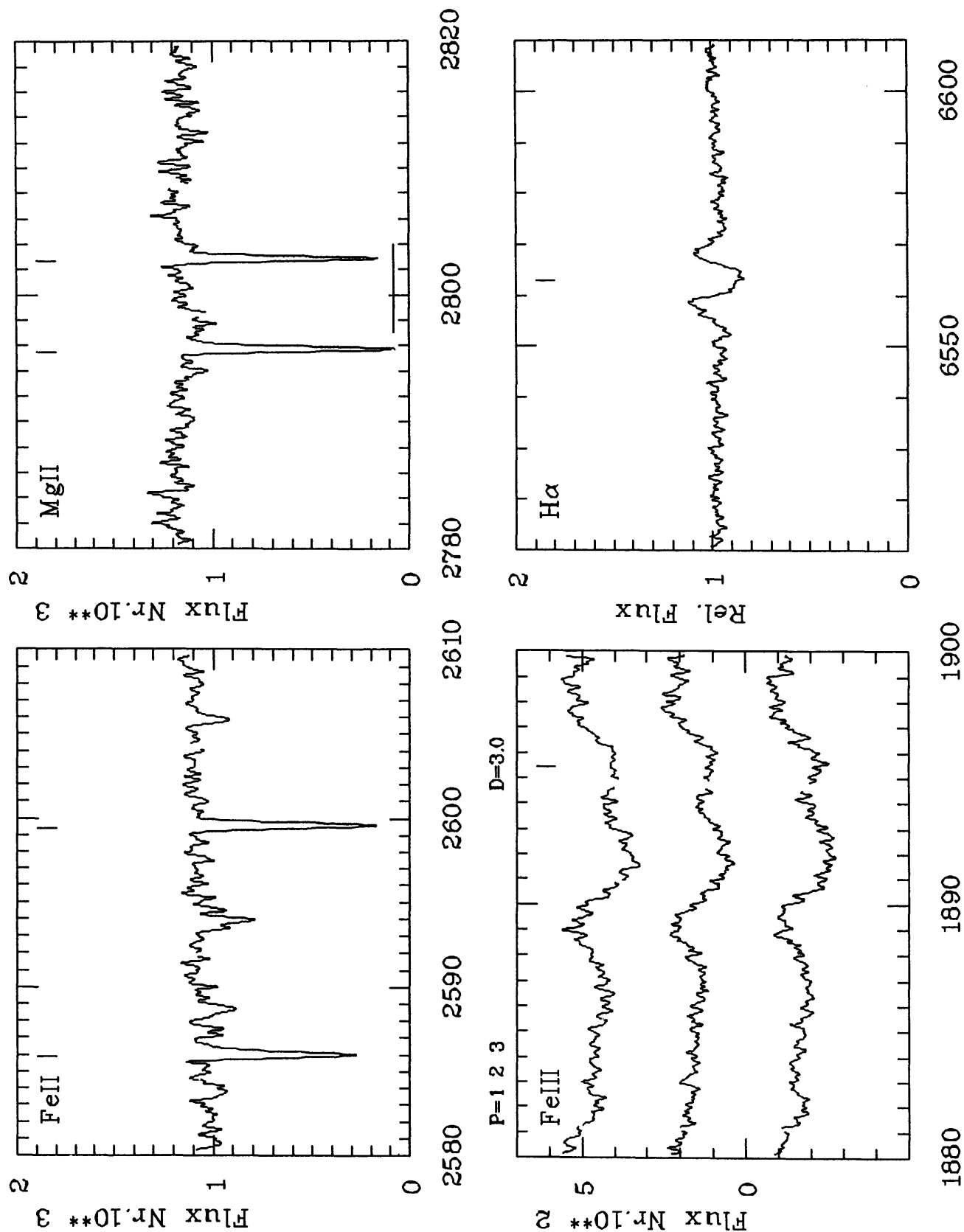


IVE 3 18004 L 82.09.18 - 3 29301 L 86.09.23 - 3 32238 L 87.11.05
 IVE 2 15156 L 83.01.31

OHP R GA5697 84.01.03

HD 33328 B2IIIep

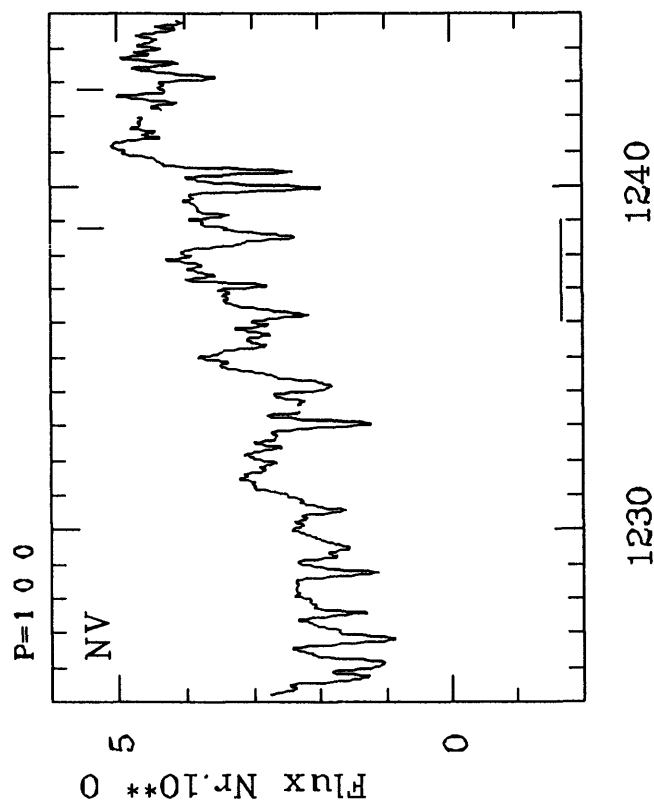
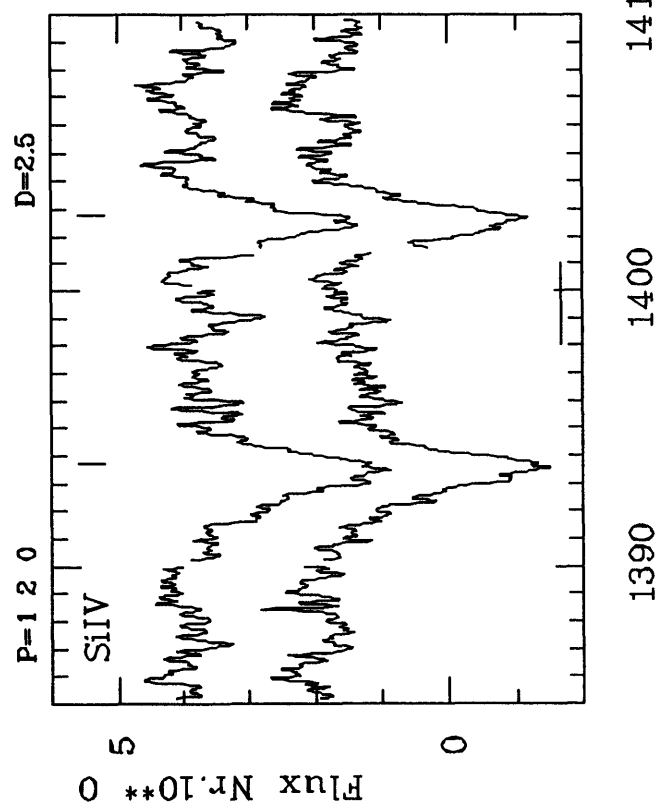
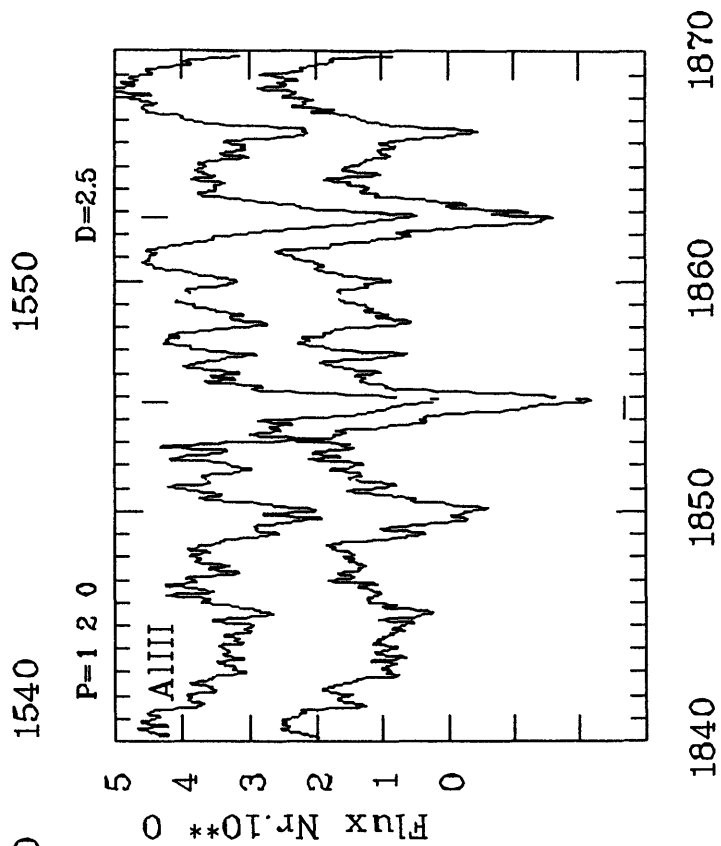
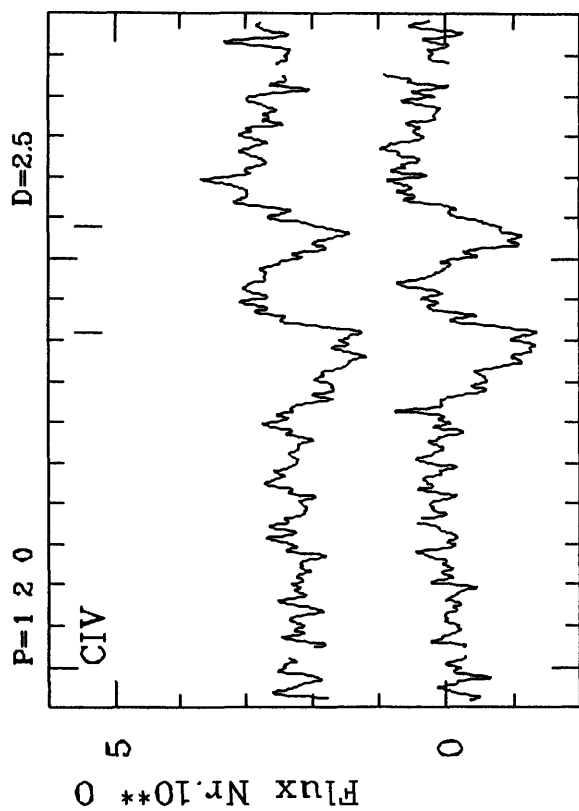
vsini 220



IUE 3 18004 L 82.09.18 - 3 29301 L 86.09.23 - 3 32238 L 87.11.05
 IUE 2 15156 L 83.01.31

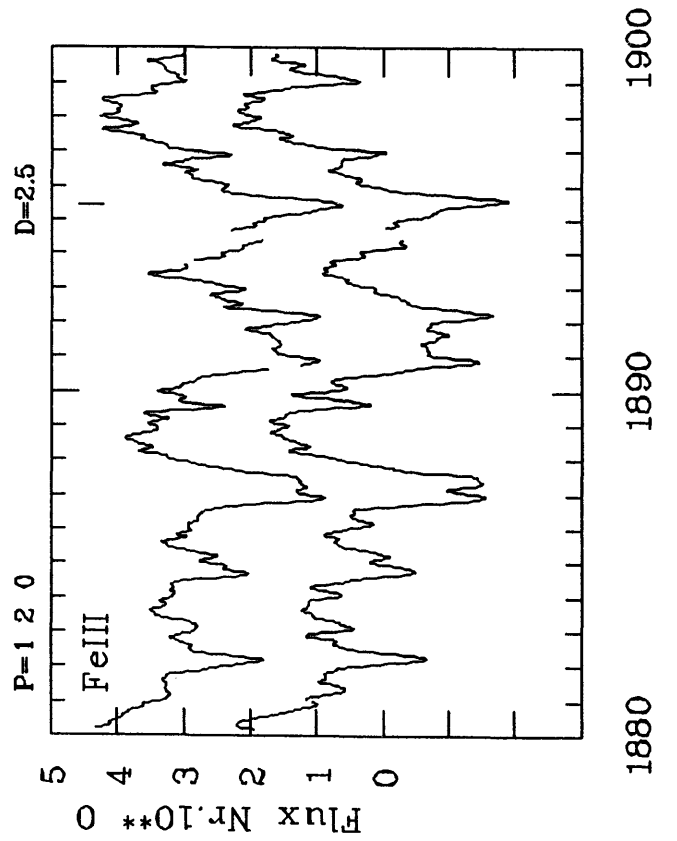
OHP R GA5697 84.01.03

HD 33599 B5psh



IUE 3 25657 L 85.04.10 - 3 28217 L 86.04.22

HD 33599 B5psh

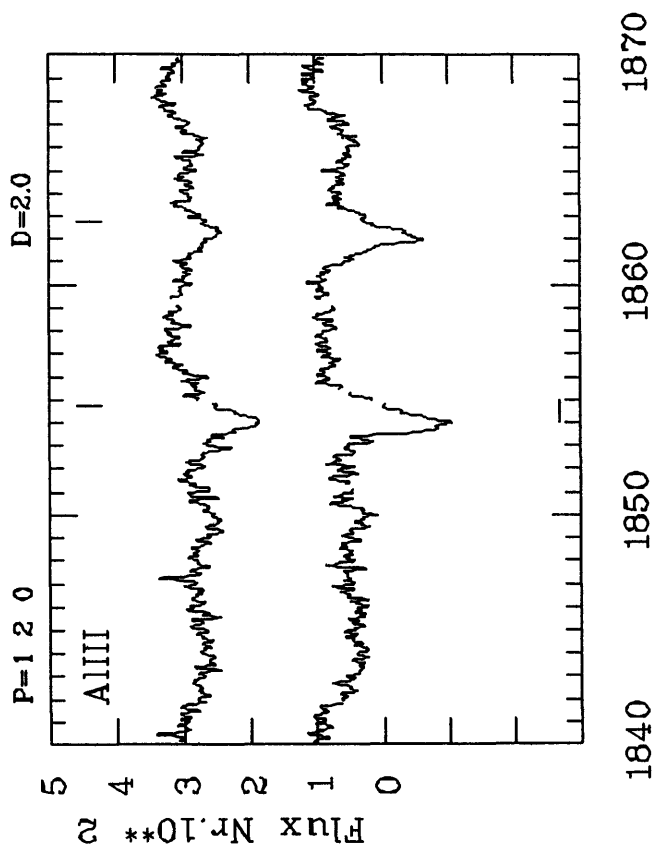
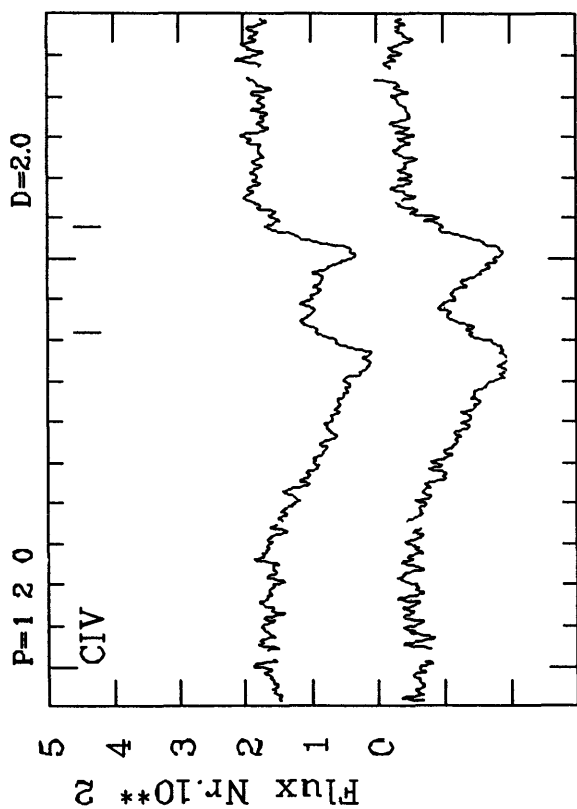


IUE 3 25657 L 85.04.10 - 3 28217 L 86.04.22

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-
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HD 35439 B1Ve

vsini 320

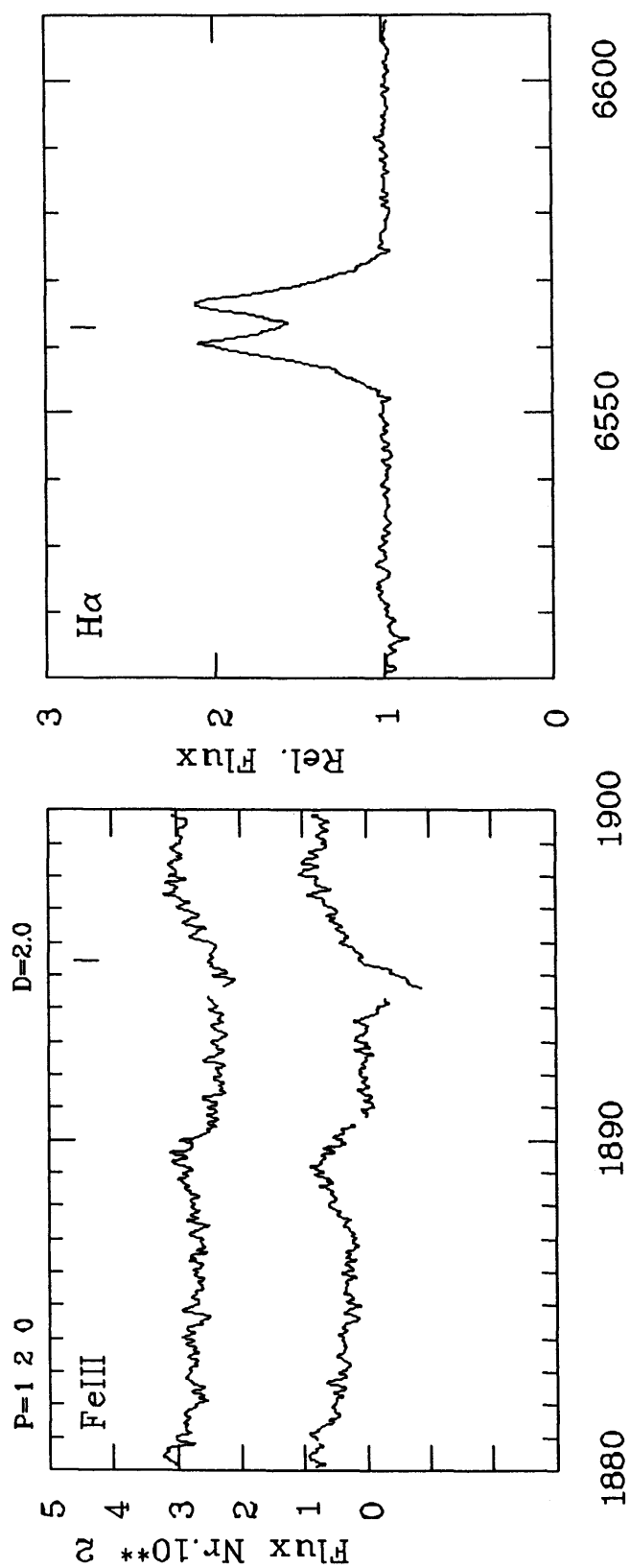


IUE 3 21910 L 83.12.30 - 3 30055 L 87.01.09

OHP R GB7045 82.03.11

HD 35439 B1Ve

vsini 320



IUE 3 21910 L 83.12.30 - 3 30055 L 87.01.09

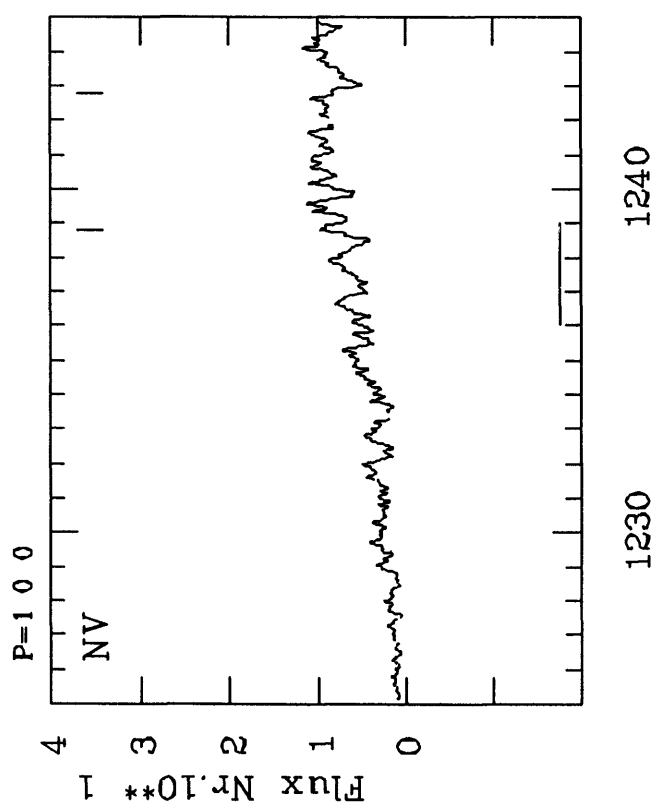
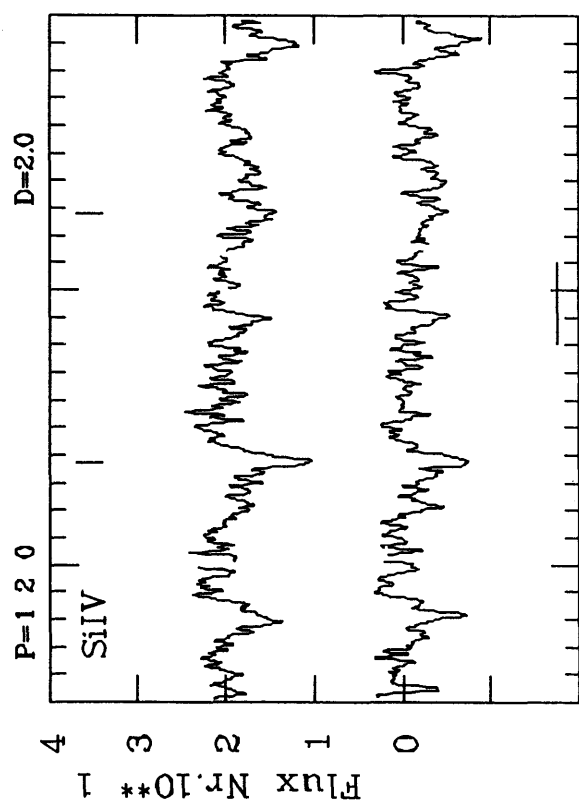
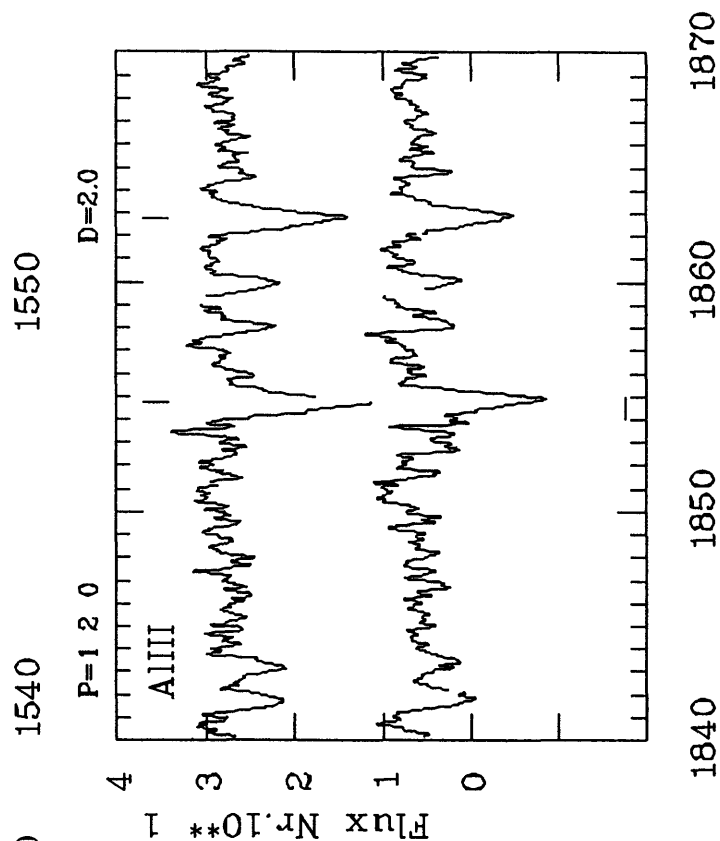
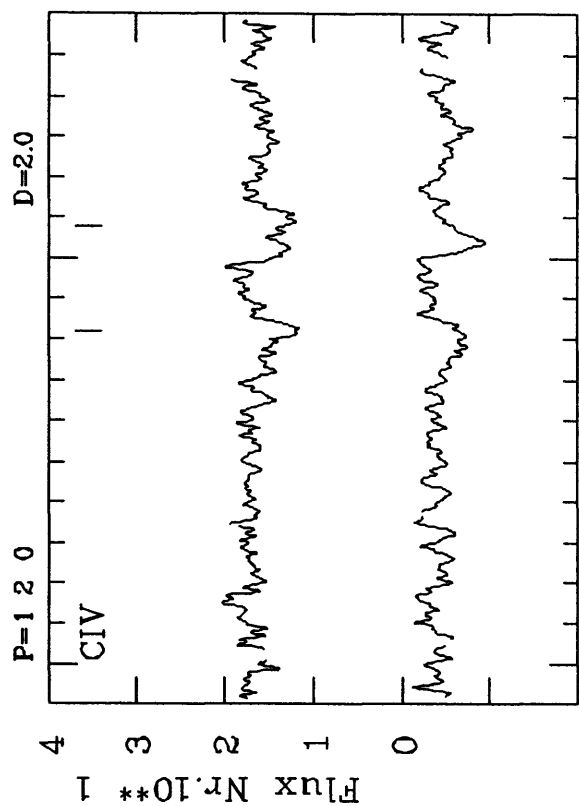
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OHP R GB7045 82.03.11

HD 36408

B7IIIe

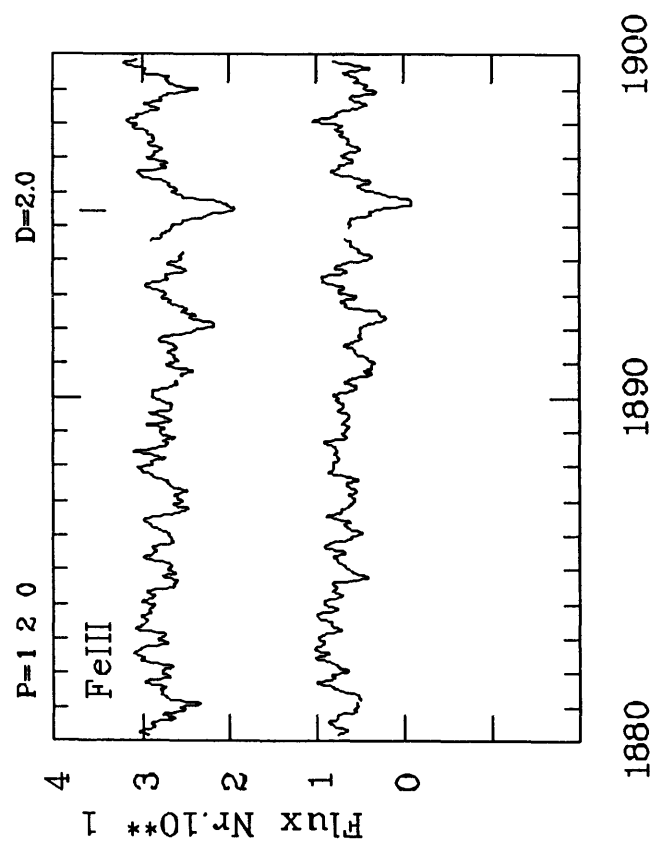
vsini 55



IUE 3 28103 L 86.04.05 - 3 29394 L 86.10.07

HD 36408 B7IIIe

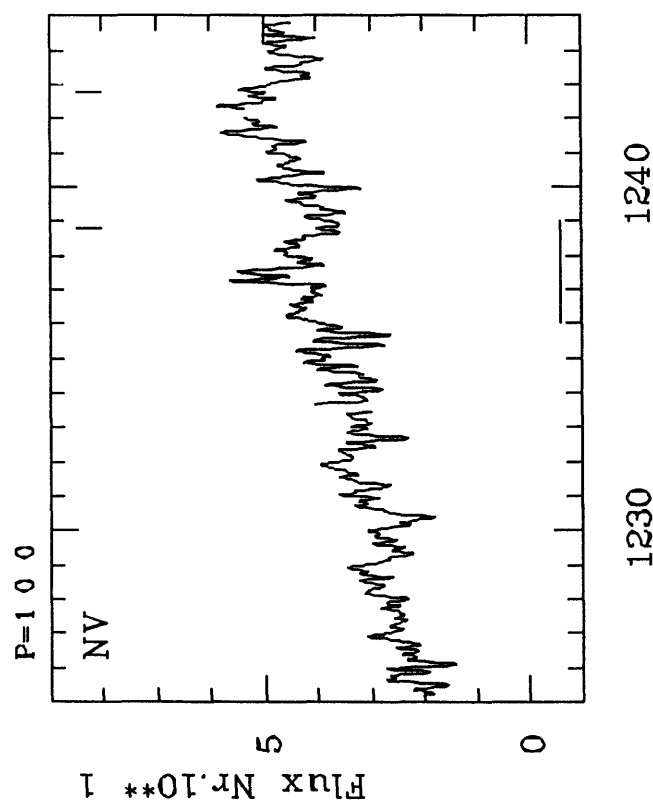
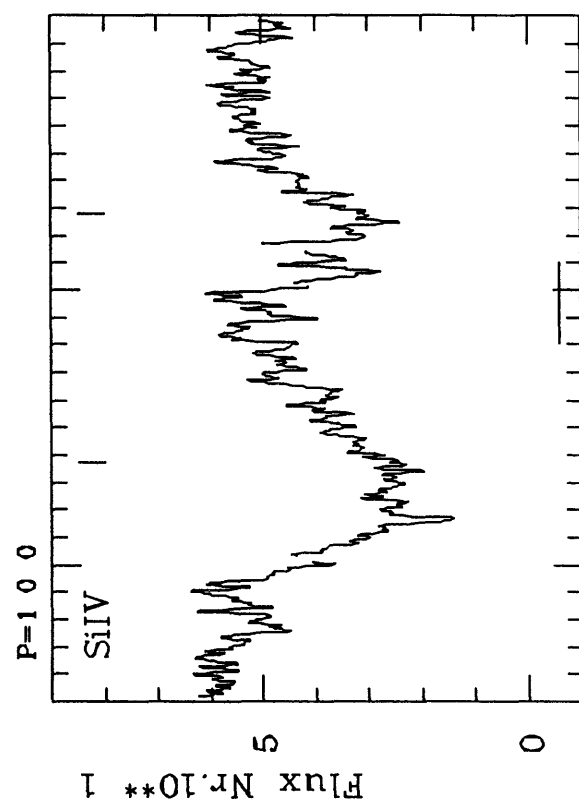
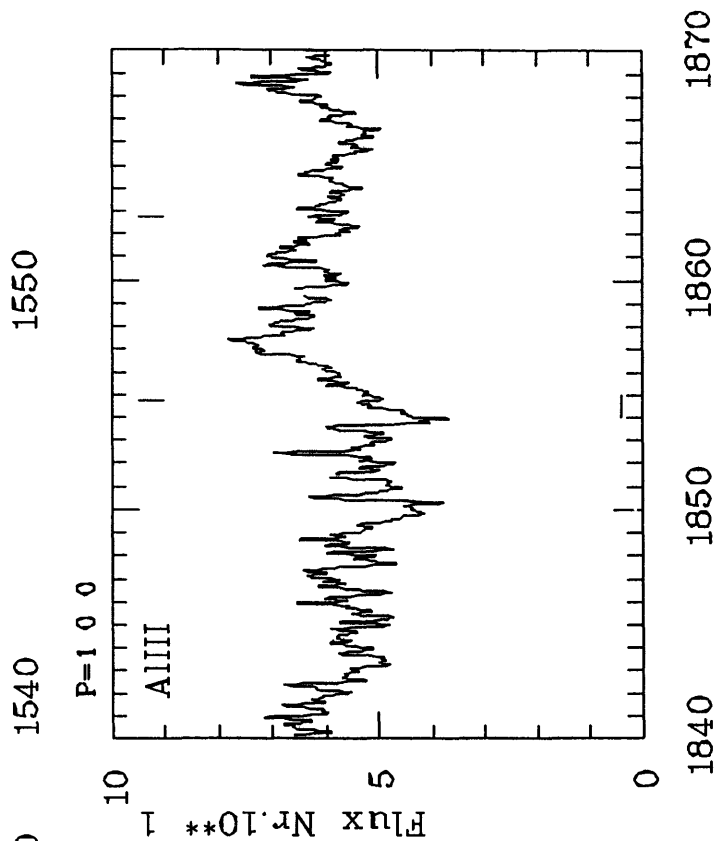
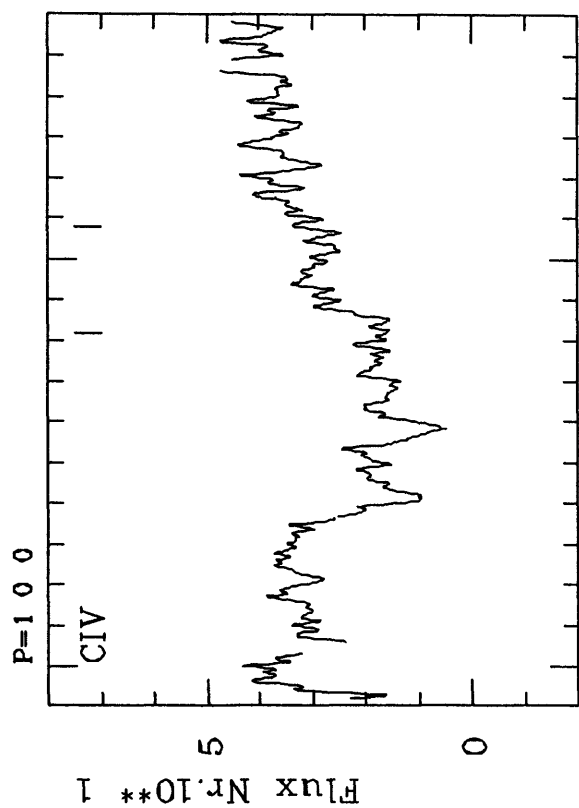
vsini 55



IUE 3 28103 L 86.04.05 - 3 29394 L 86.10.07

HD 36576 B1.5IVe

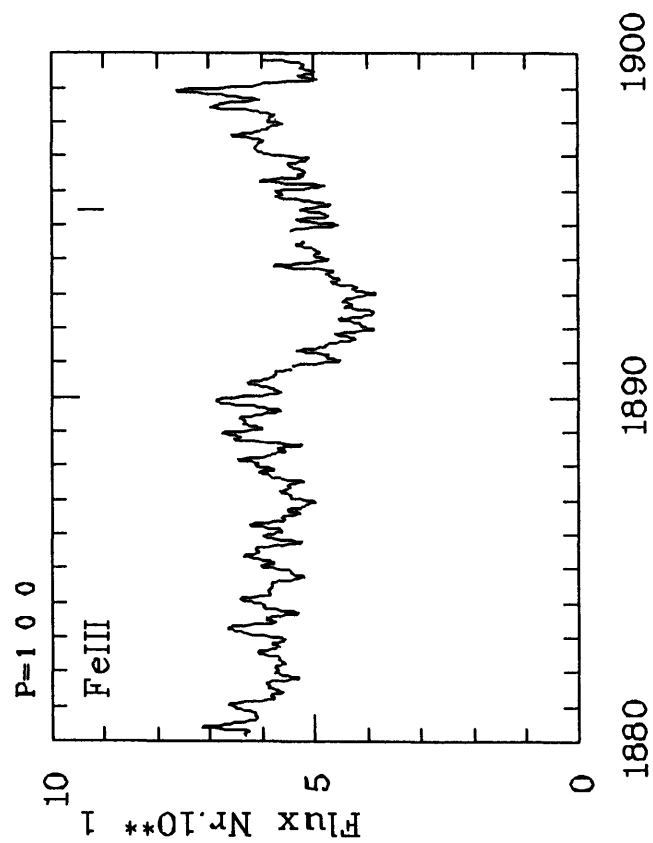
vsini 210



HD 36576

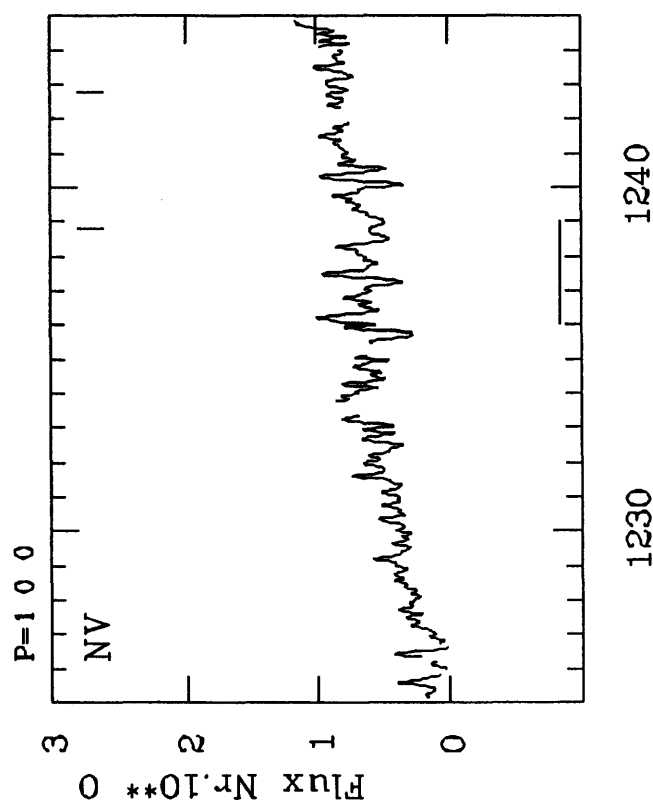
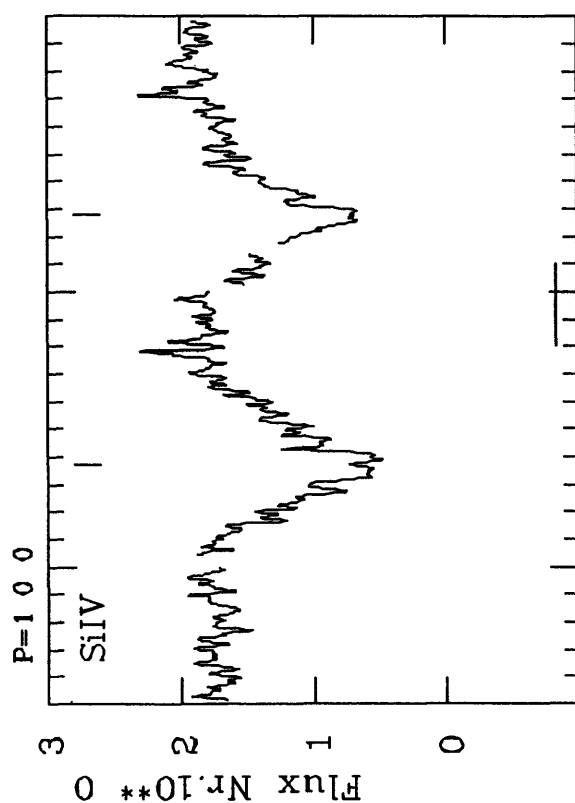
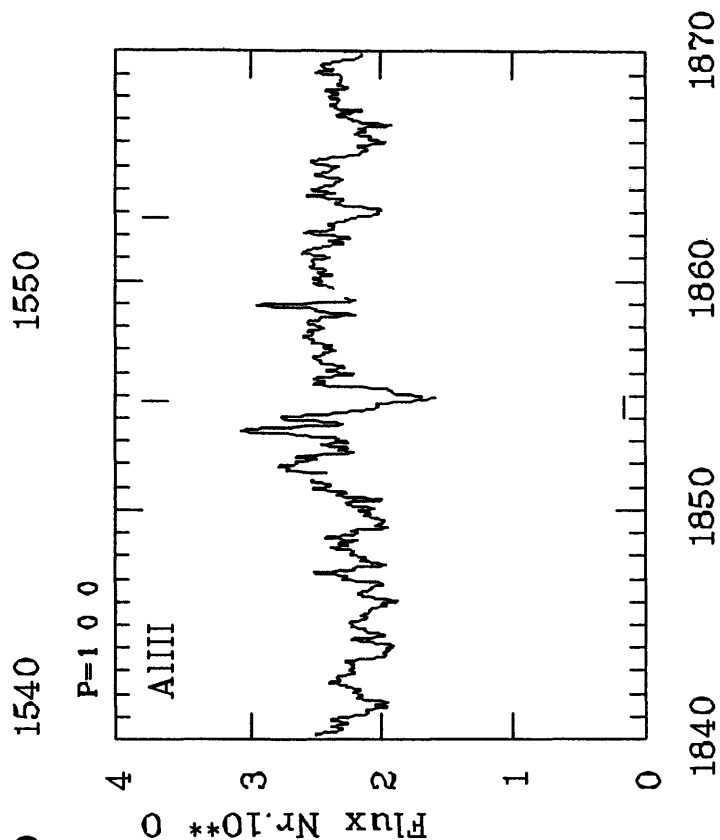
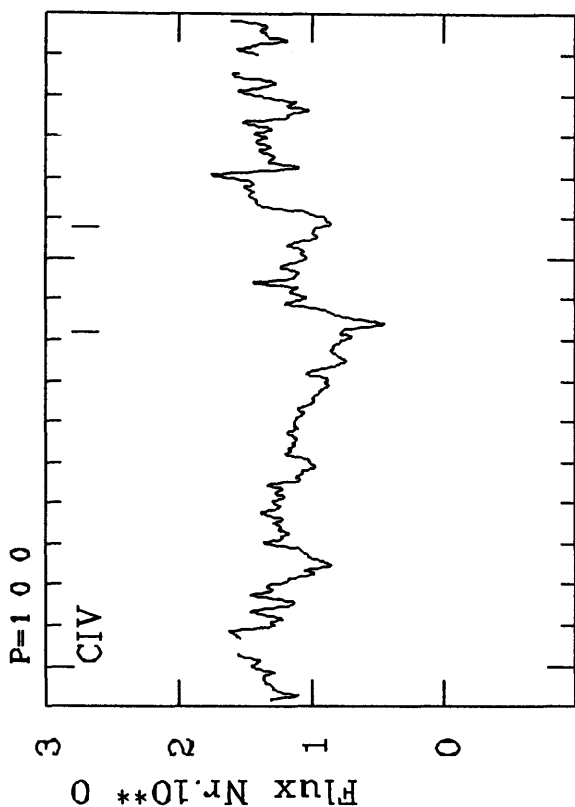
B1.5IVe

vsini 210



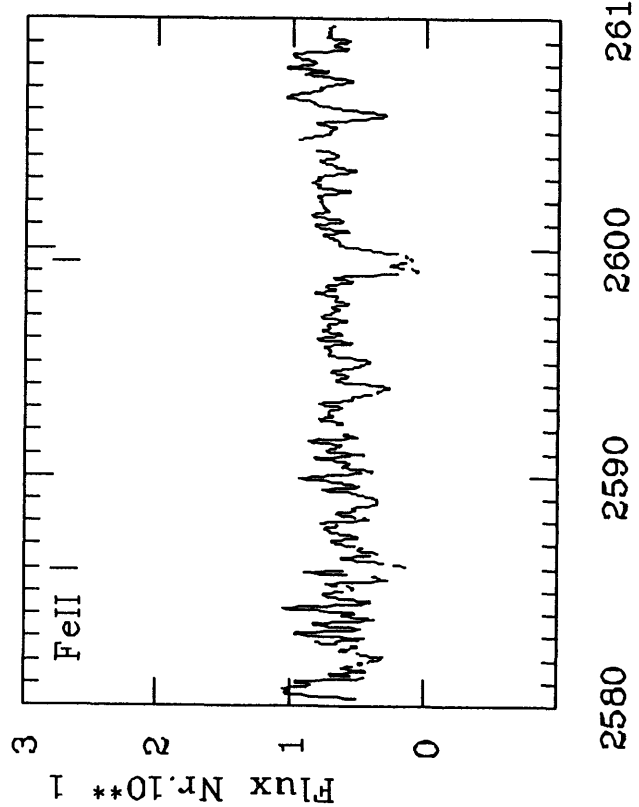
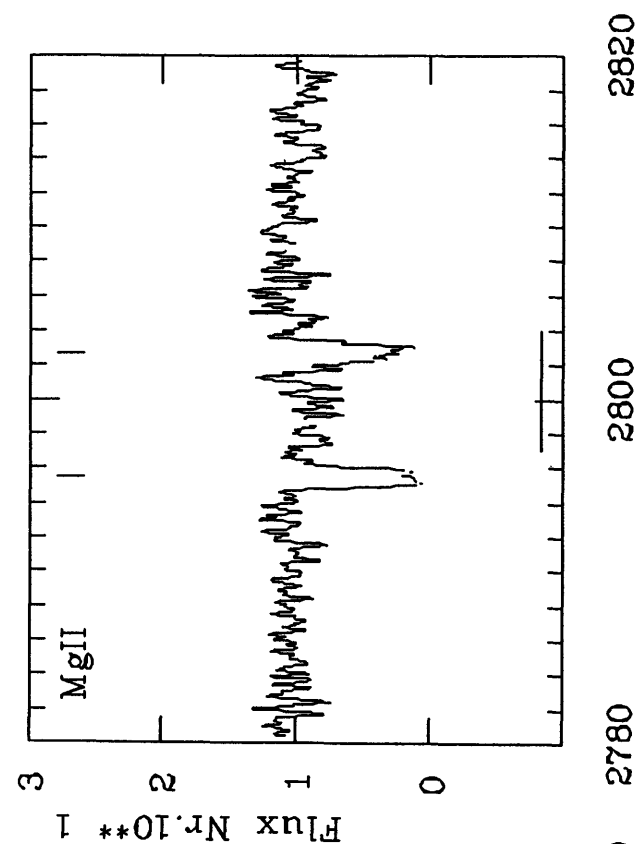
IUE 3 21492 L 83.11.09

HD 36665 B8e

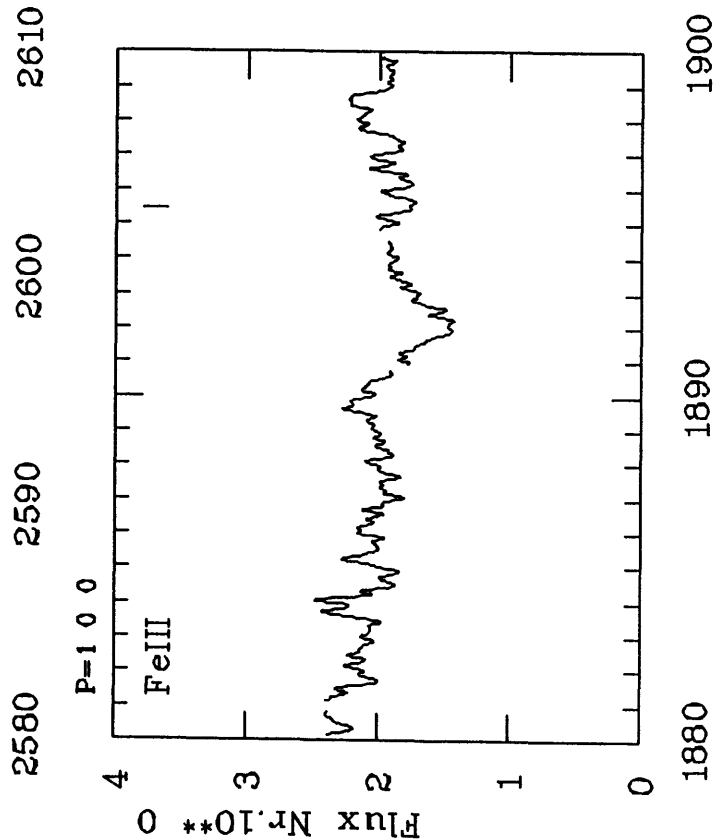


IUE 3 08862 L 80.04.29
IUE 2 14748 L 82.11.29

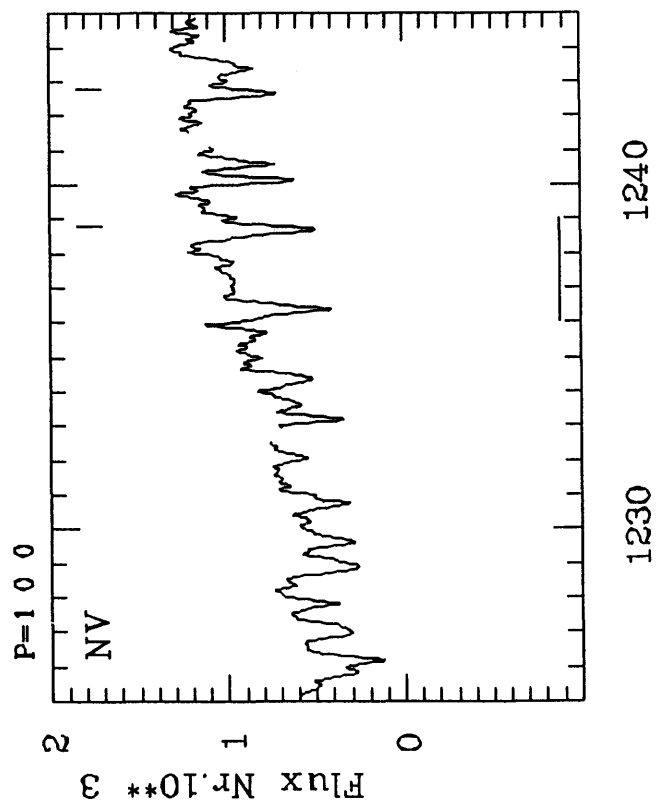
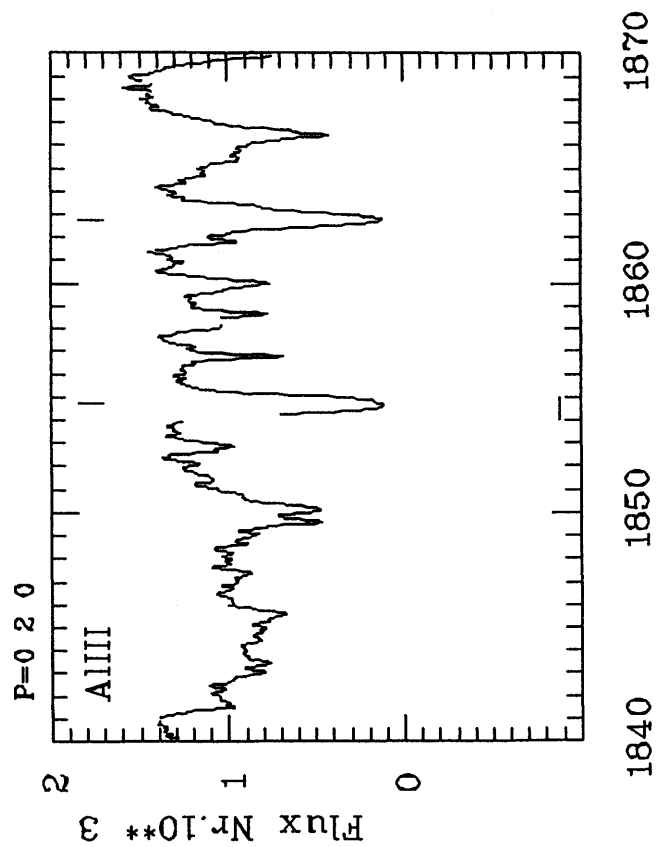
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IUE 3 08862 L 80.04.29
 IUE 2 14748 L 82.11.29



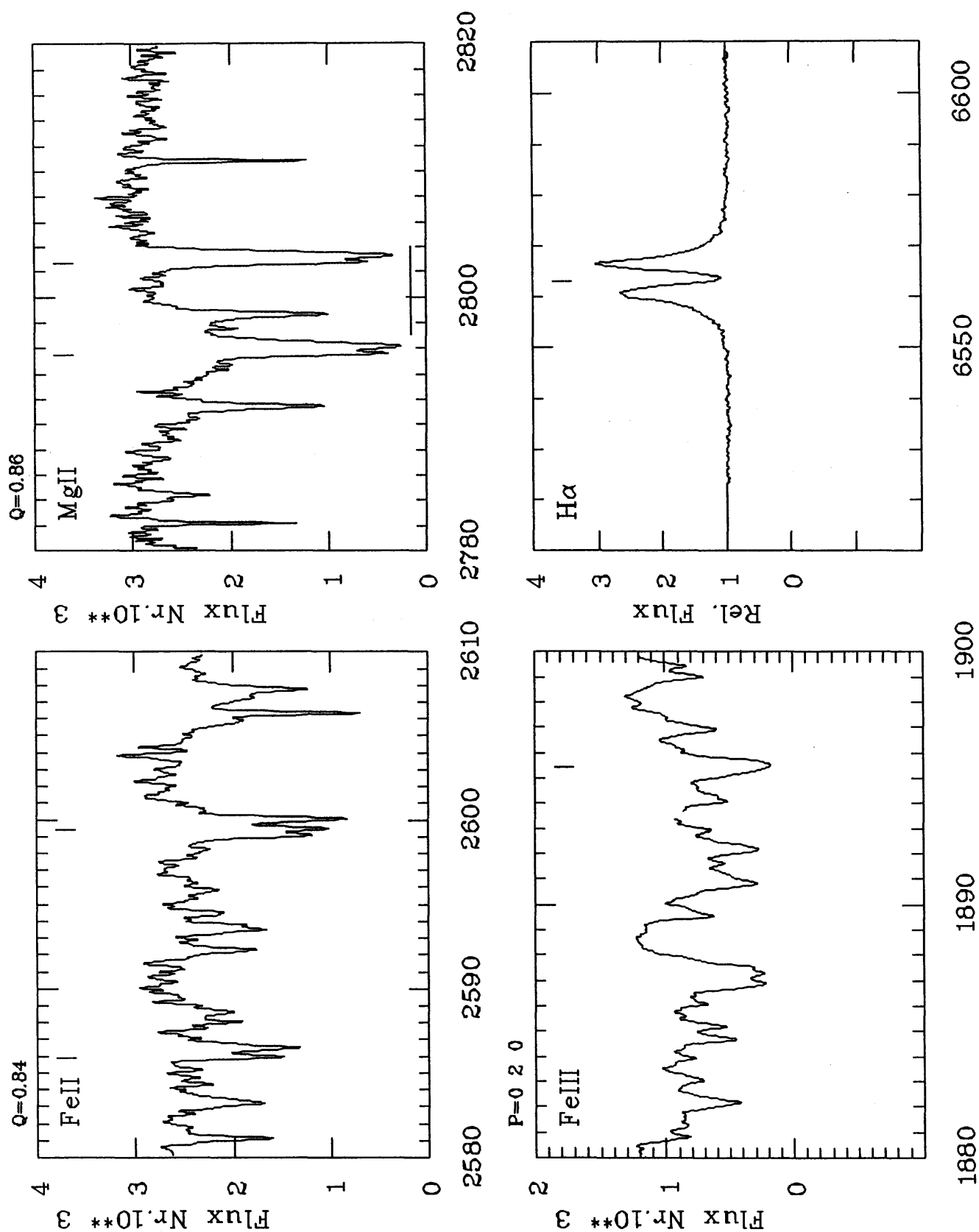
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OHP R GB2637 73.10.22 - OHP R W6524 77.11.2

HD 37202 B1IVesh

vsini 220

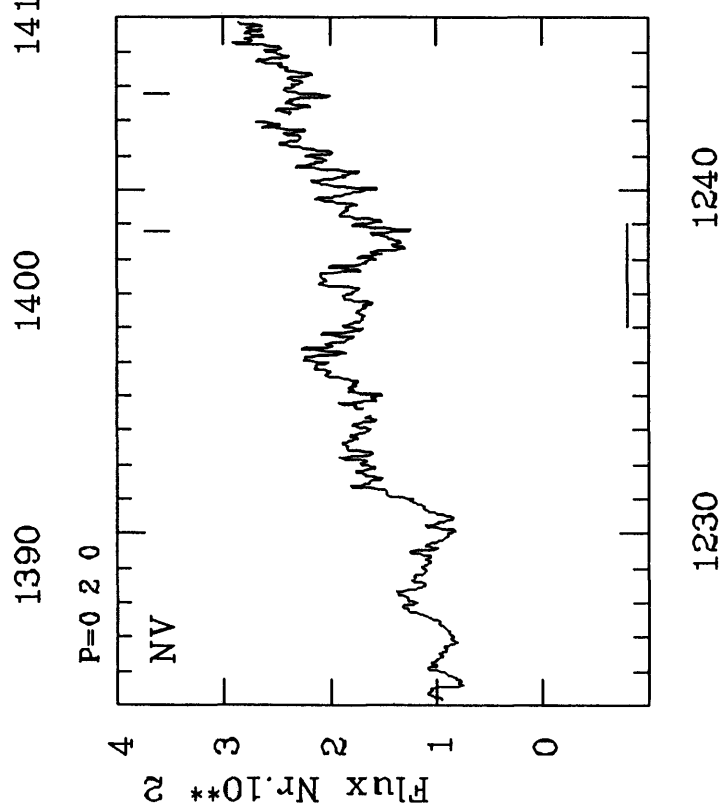
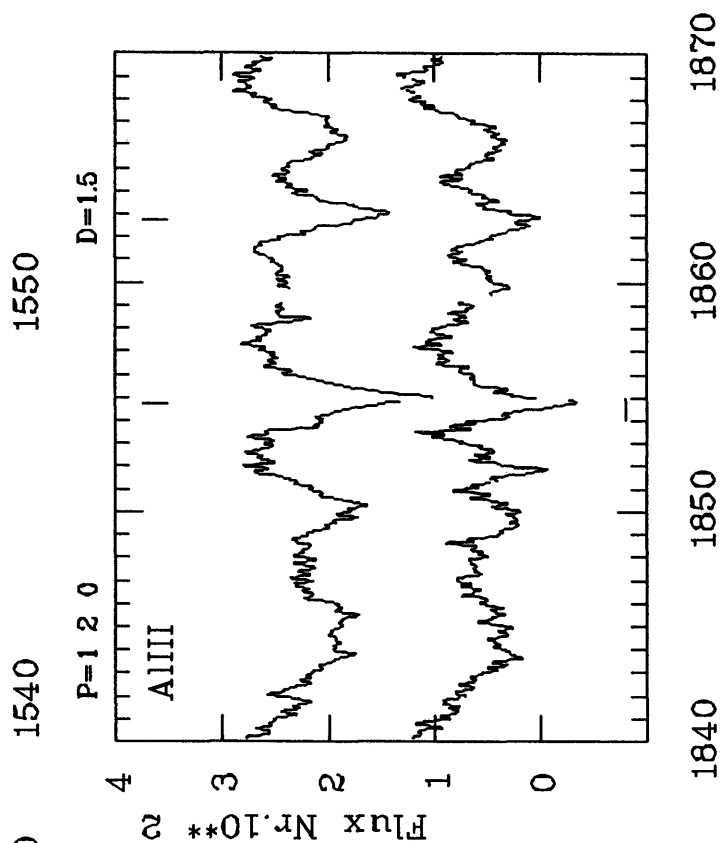
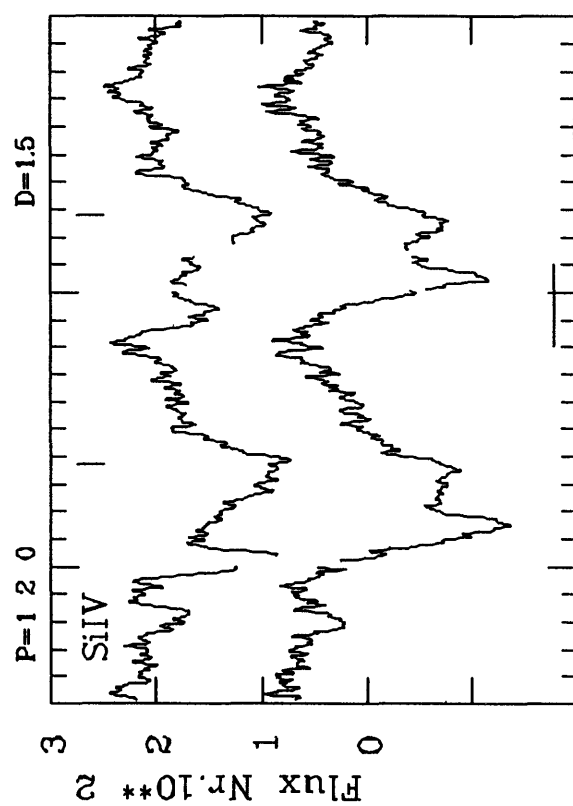
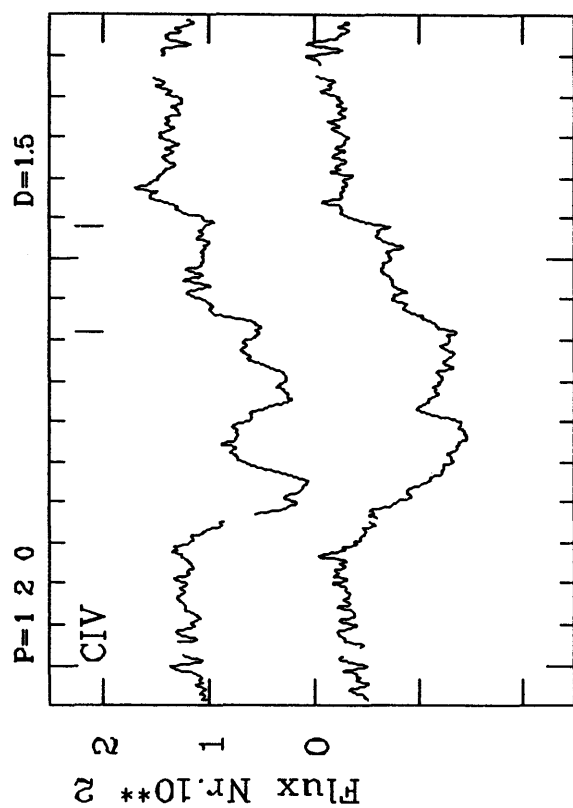


IUE 3 02356 S 78.08.21 - 3 17842 S 82.09.02
 IUE 2 03084 S 78.12.01

OHP R GB2637 73.10.22 - OHP R W6524 77.11.2

HD 37490 B2IIIe

vsini 160

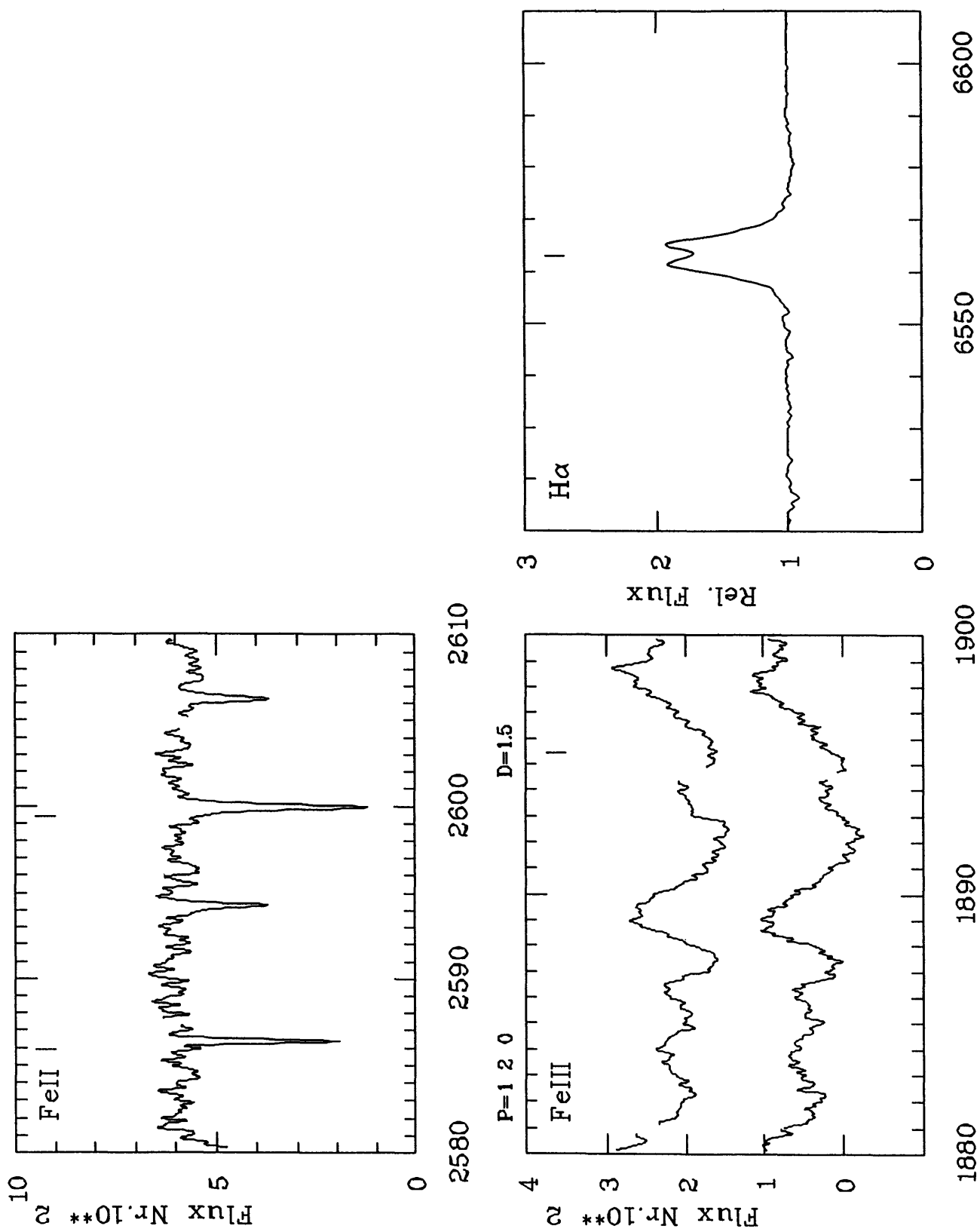


IUE 3 08615 L 80.03.31 - 3 15976 L 82.01.06
 IUE 2 07361 L 80.03.31

OHP R CCD20003 87.11.29

HD 37490 B2IIIe

vsini 160



IUE 3 08615 L 80.03.31 - 3 15976 L 82.01.06

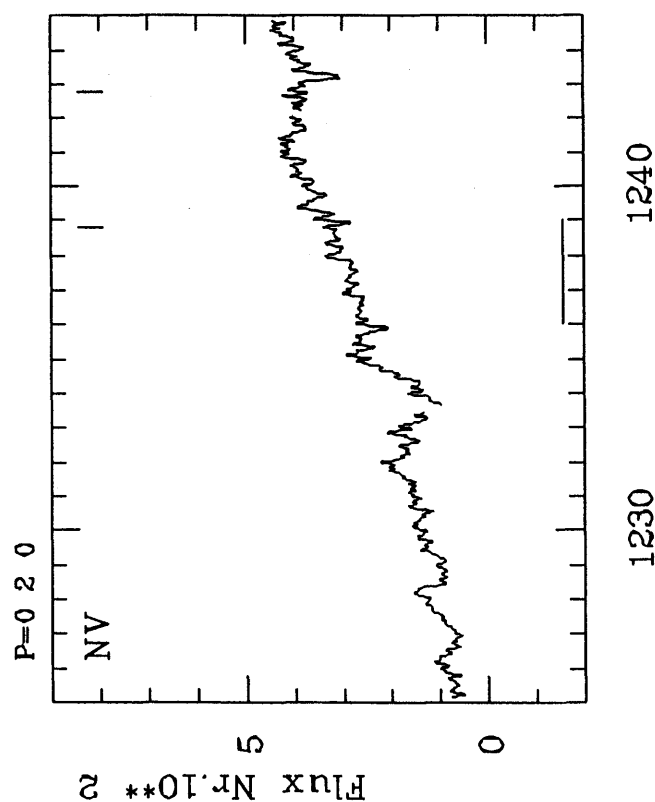
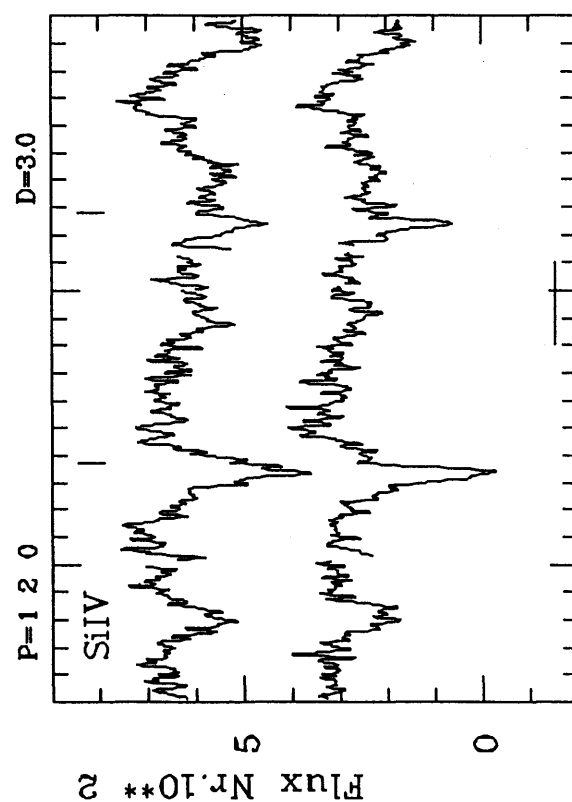
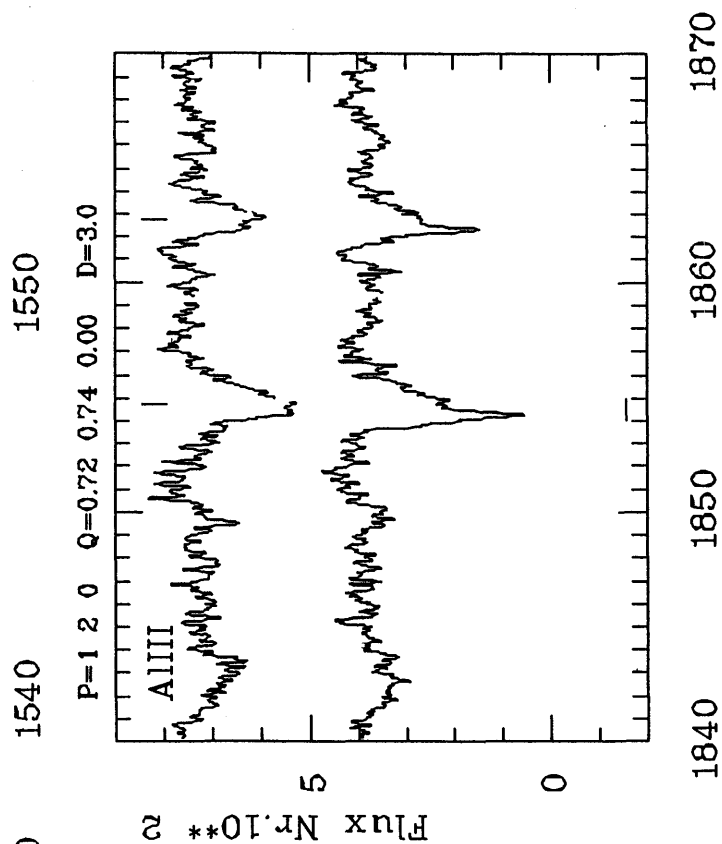
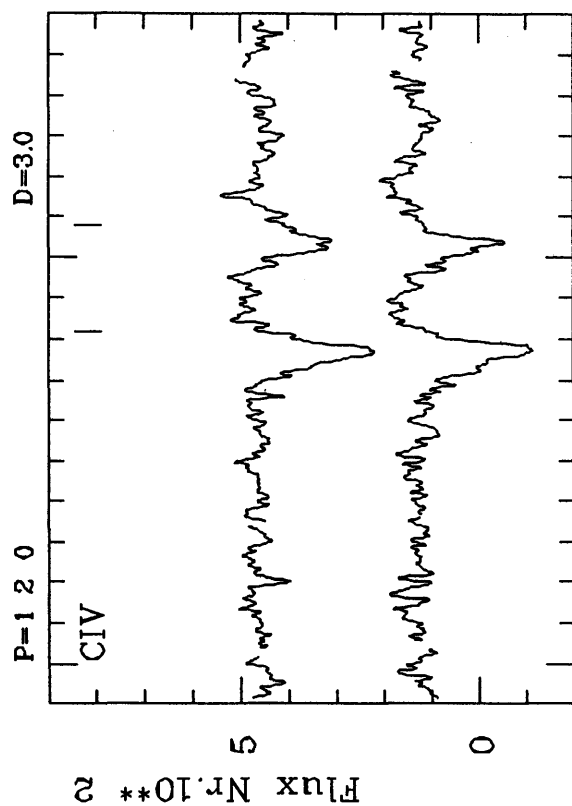
IUE 2 07361 L 80.03.31

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OHP R CCD20003 87.11.29

HD 37795 B7IVe

vsini 180



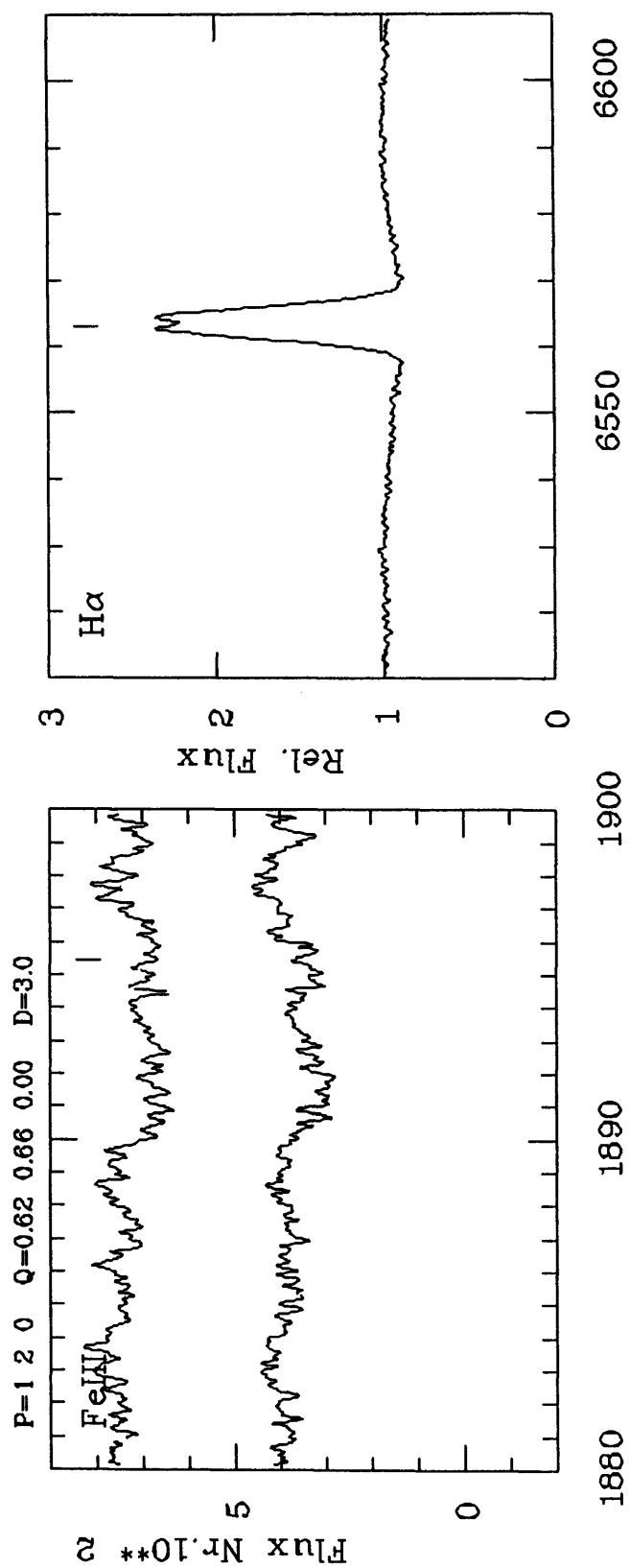
IUE 3 28121 L 86.04.07 - 3 31901 L 87.09.22

ESO R G13866 88.10.27

HD 37795

B7IVe

vsini 180

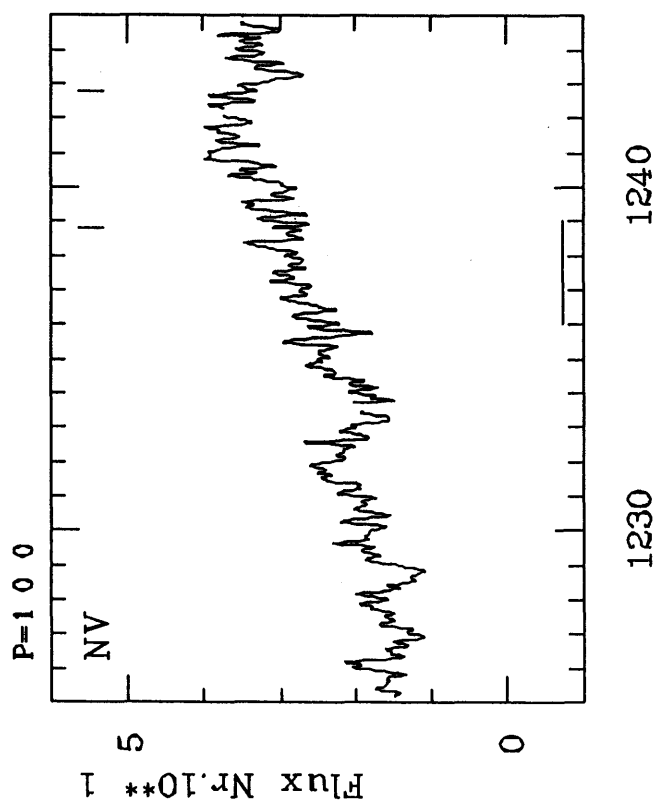
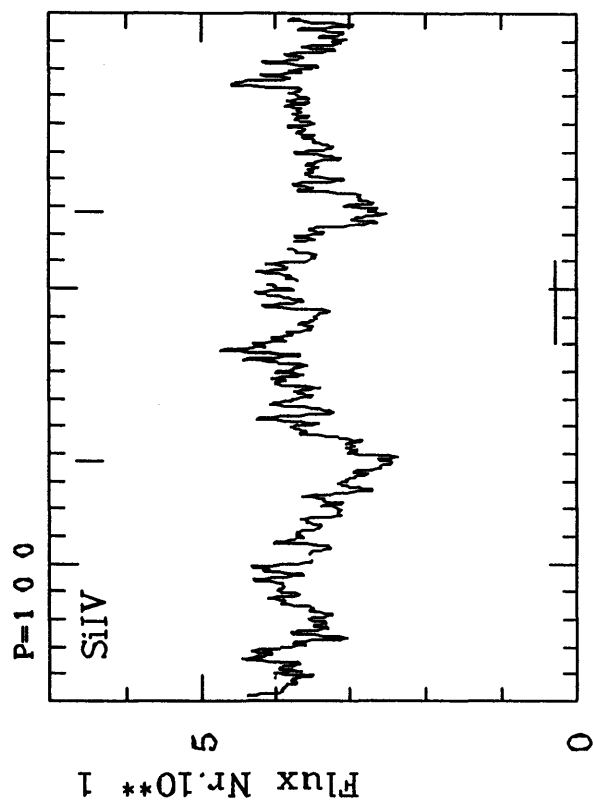
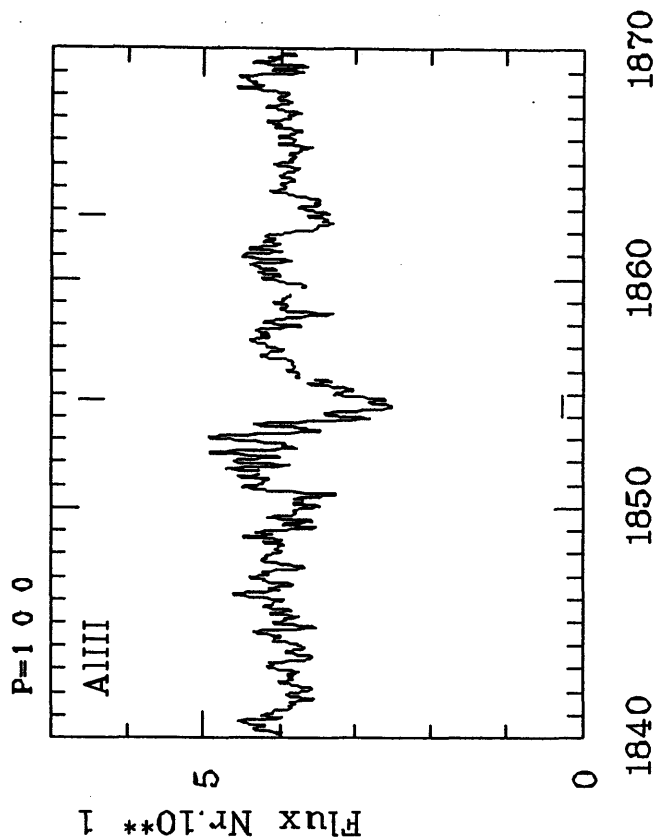
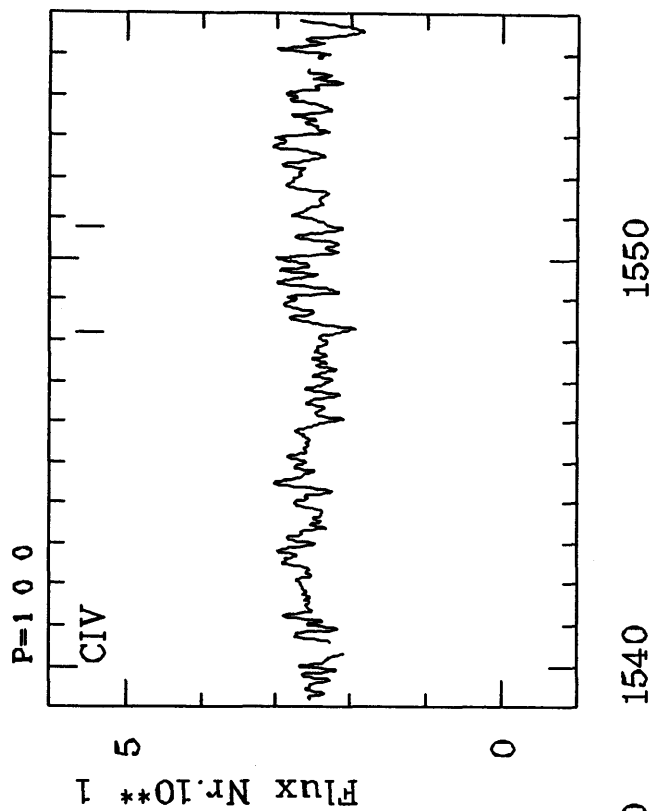


IUE 3 28121 L 86.04.07 - 3 31901 L 87.09.22

ESO R G13866

88.10.27

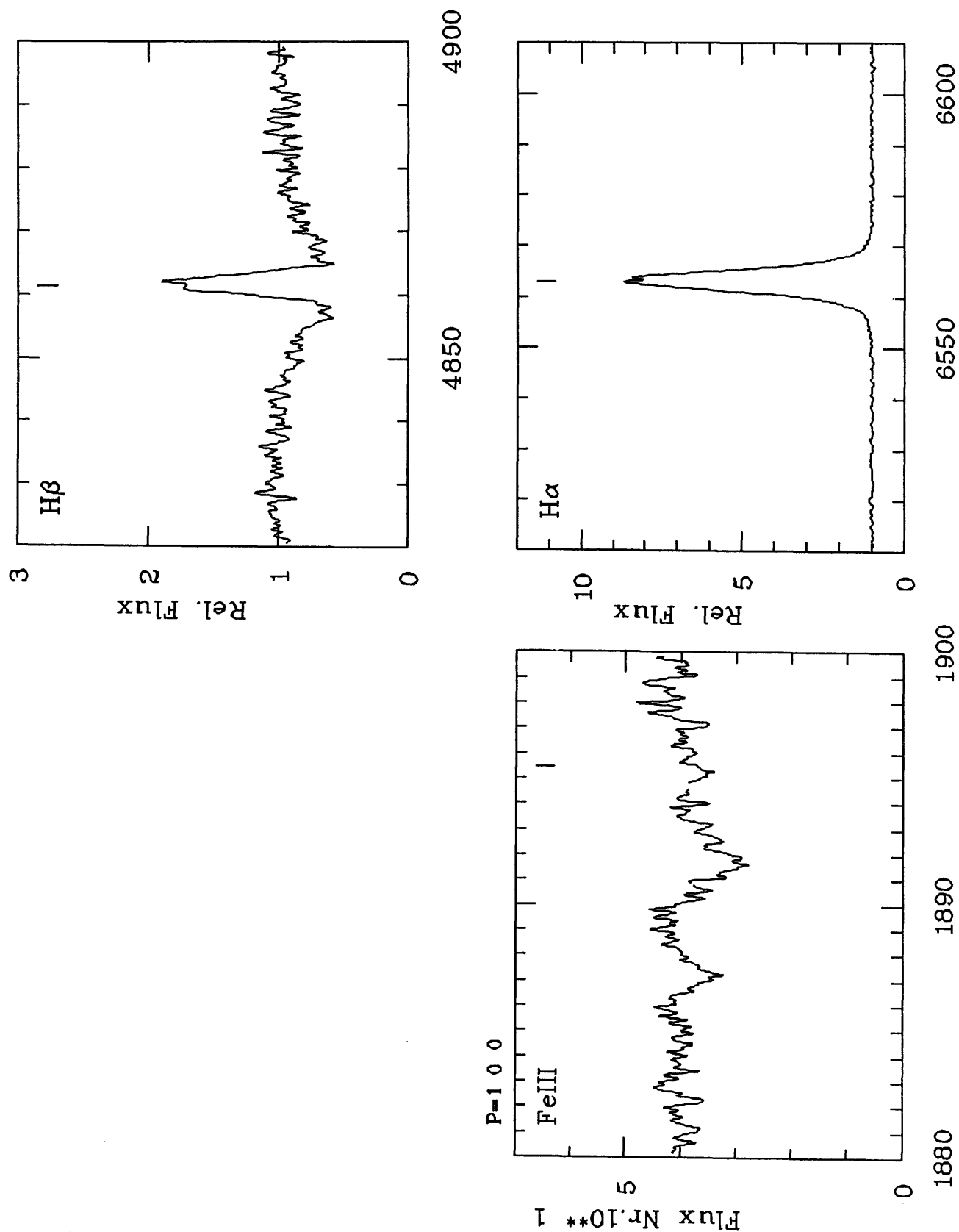
HD 37967 B2.5Ve



IUE 3 21491 L 83.11.09

OHP B GA3051 77.03.03
OHP R GA3043 77.03.02

HD 37967 B2.5Ve

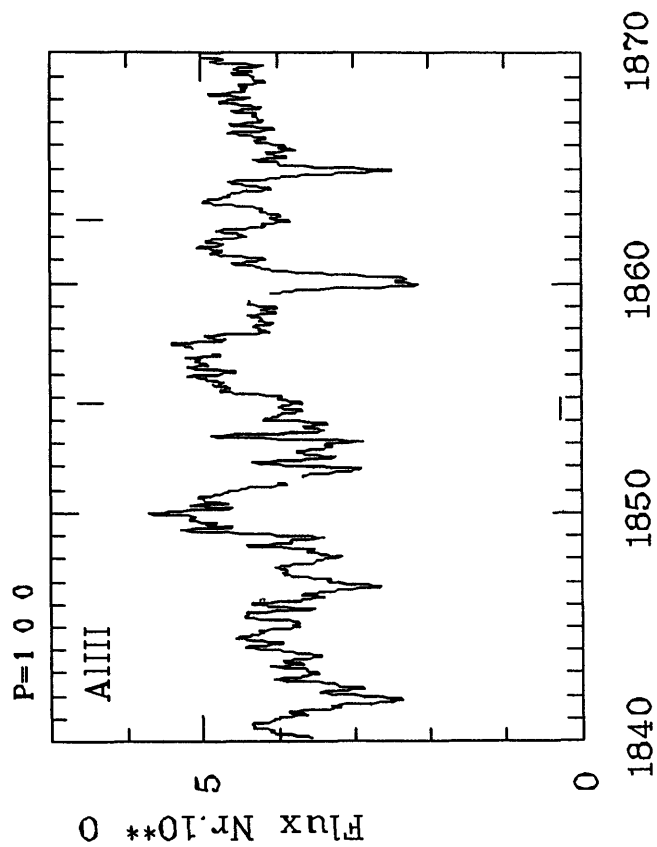
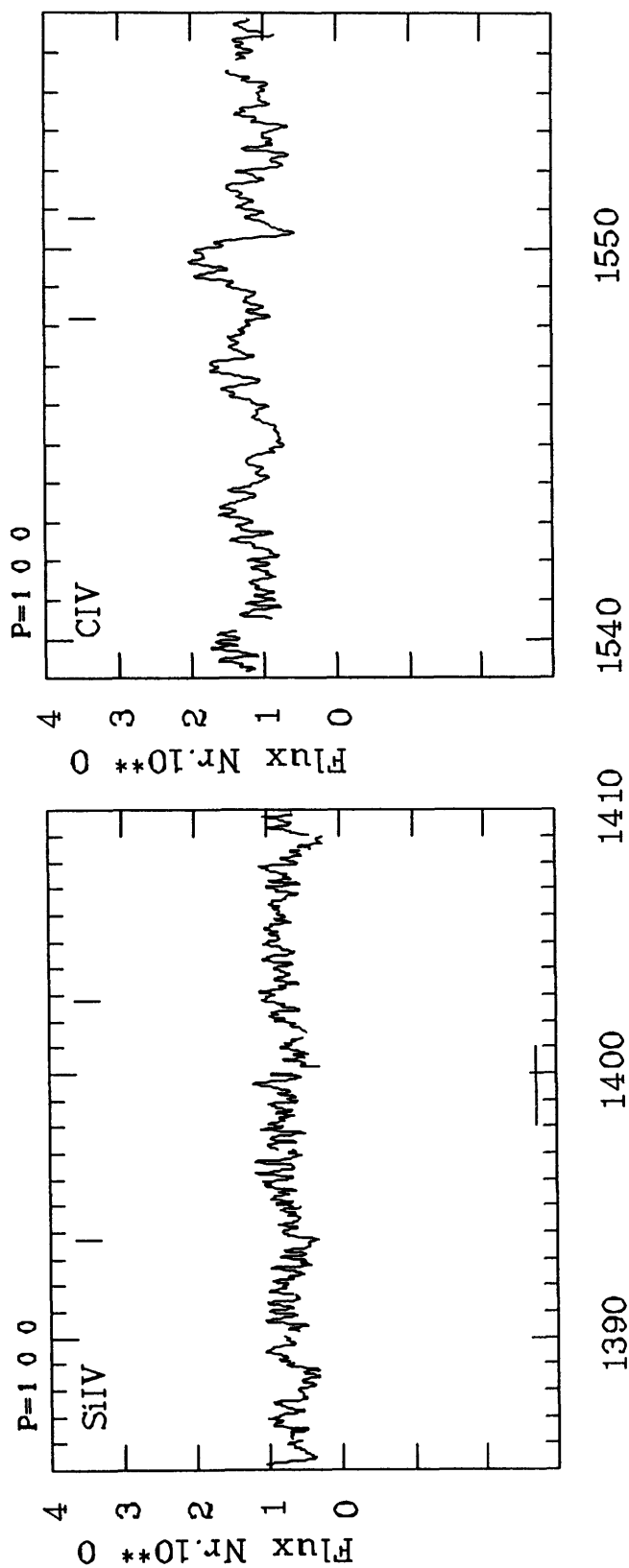


IUE 3 21491 L 83.11.09

OHP B GA3051 77.03.03
 OHP R GA3043 77.03.02

HD 38090 A3IIIsh

vsini 180



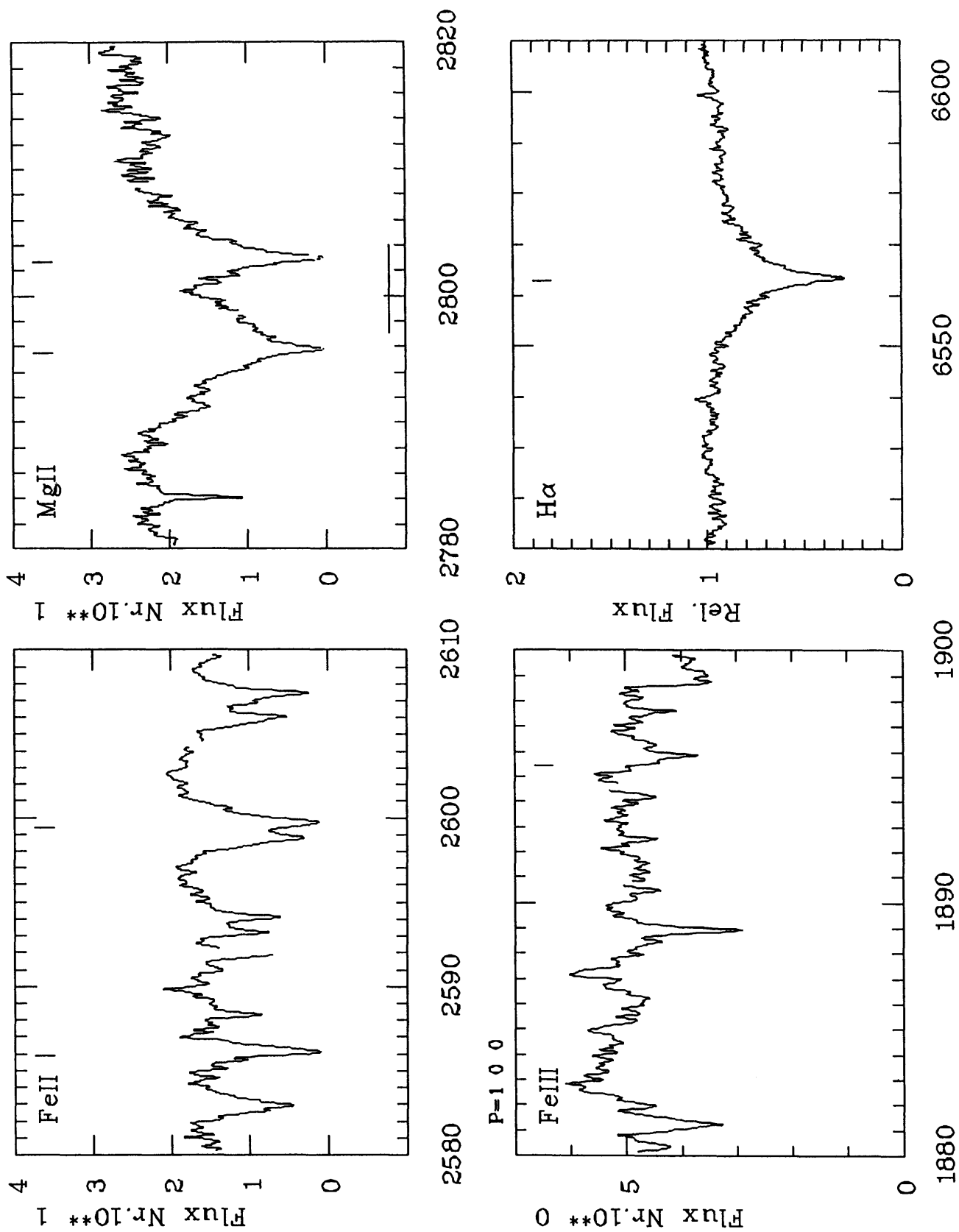
IUE 3 18820 L 82.12.19

IUE 2 14848 L 82.12.19

ESO R G13867 88.10.27

HD 38090 A3IIIsh

vsini 180



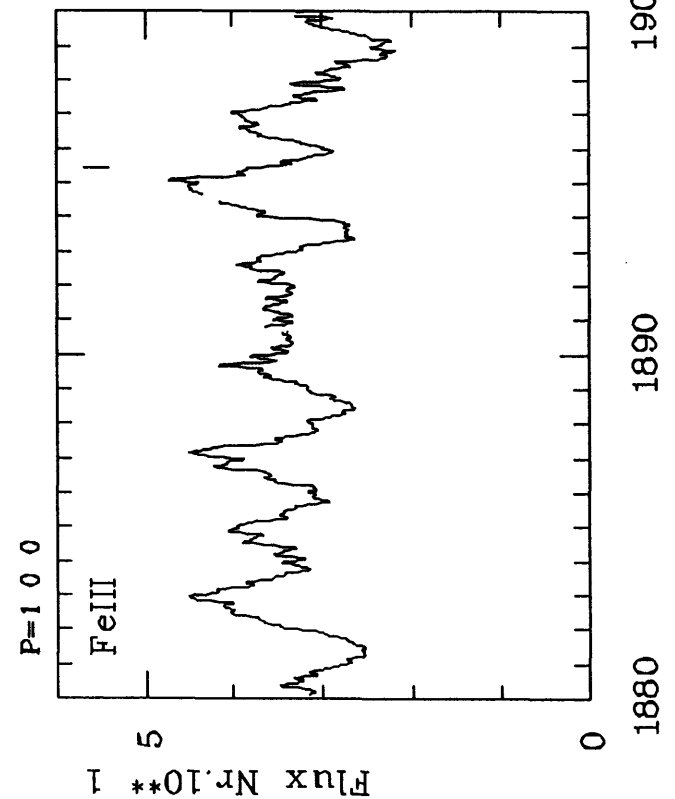
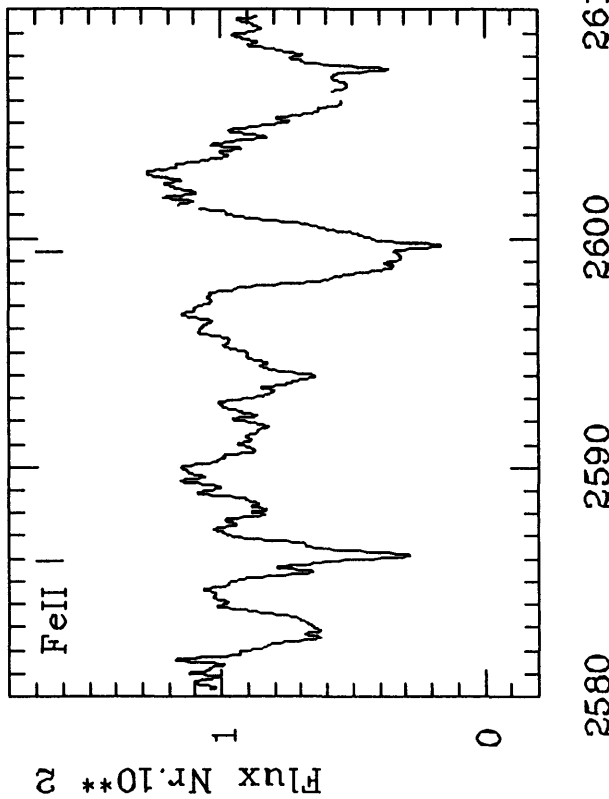
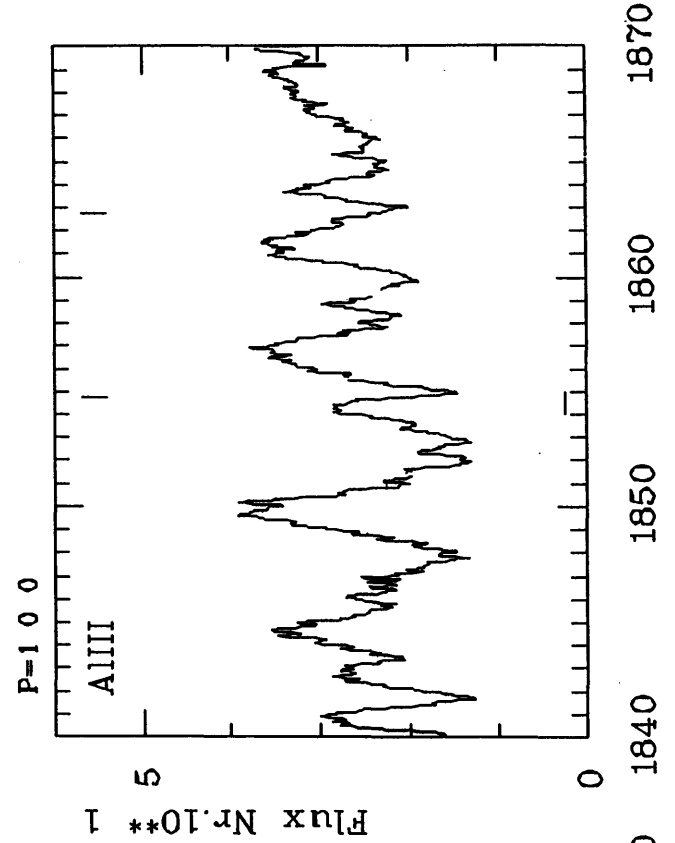
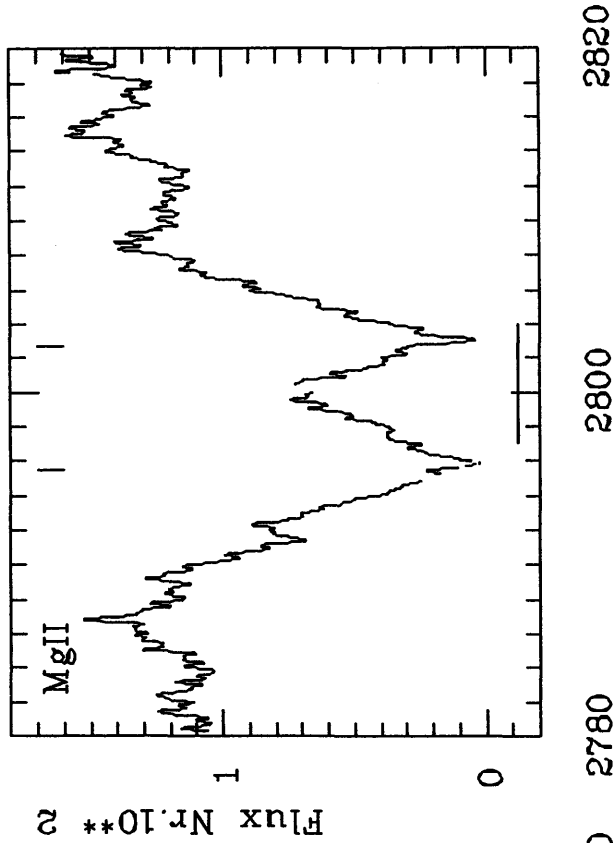
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IUE 2 14848 L 82.12.19

ESO R G13867 88.10.27

HD 39060 A5IVsh

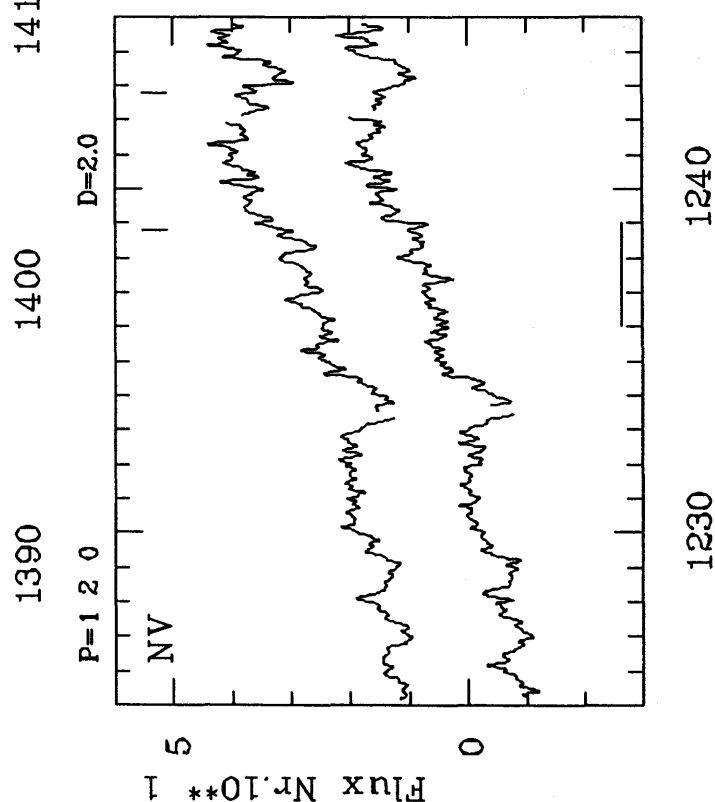
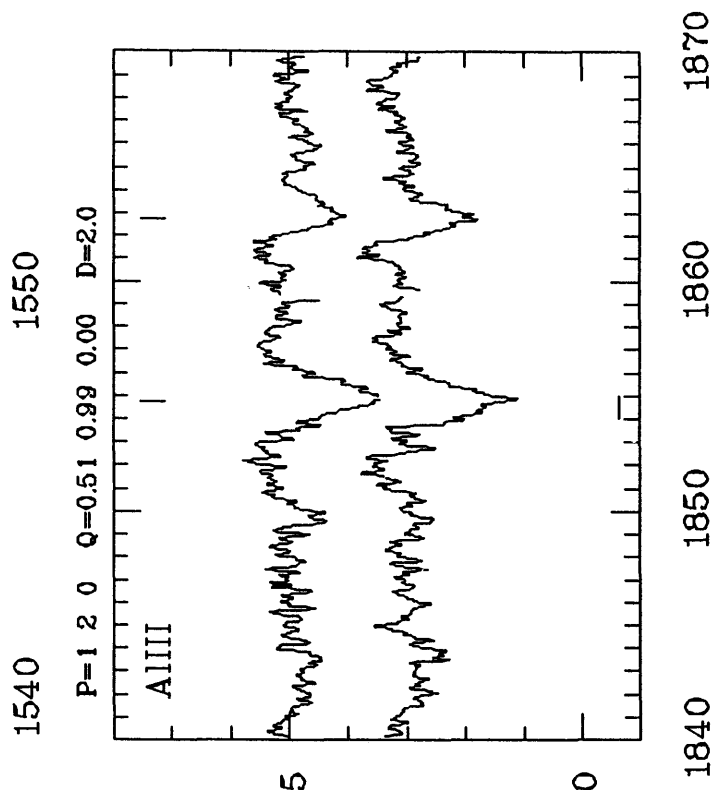
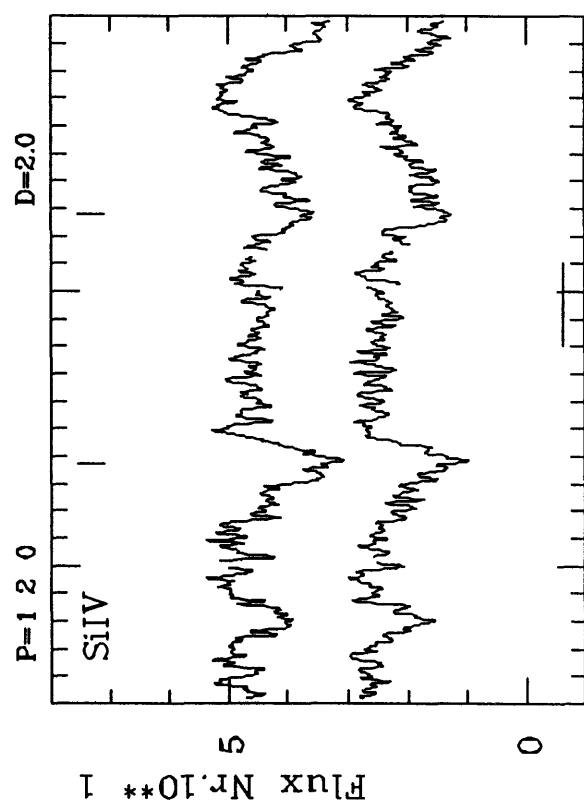
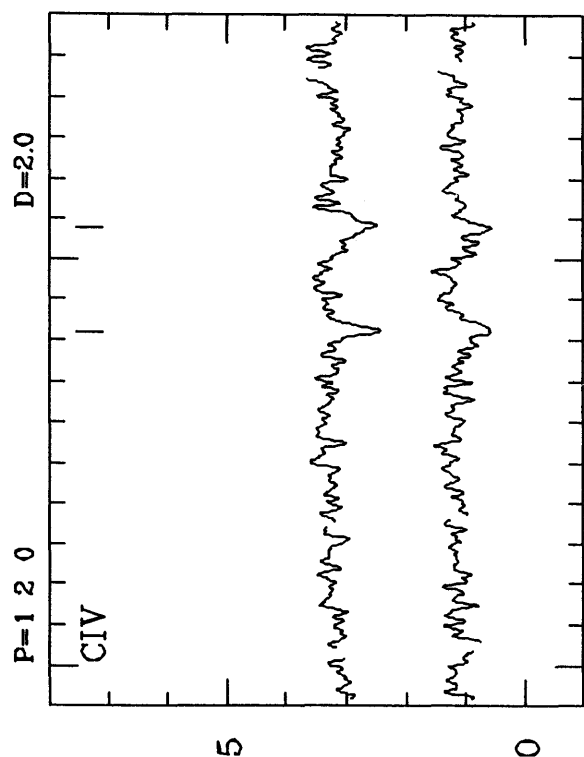
vsini 120



IUE 3 24706 L 84.12.16
 IUE 1 08132 L 86.05.01

HD 42054 B5Ve

vsini 220

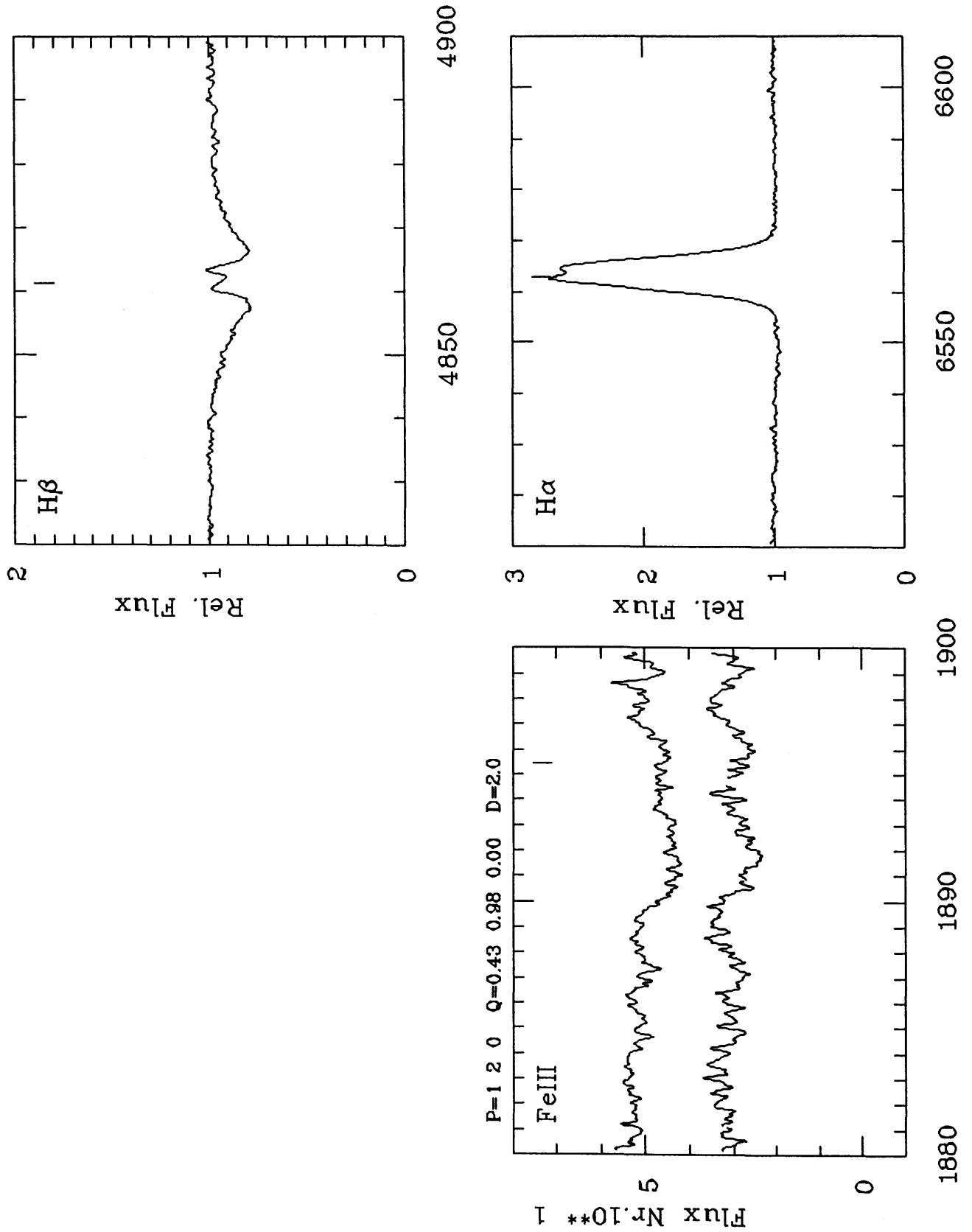


IUE 3 28117 L 86.04.06 - 3 29370 L 86.10.05

ESO B G13853 88.10.26
 ESO R G13796 88.10.22

HD 42054 B5Ve

vsini 220

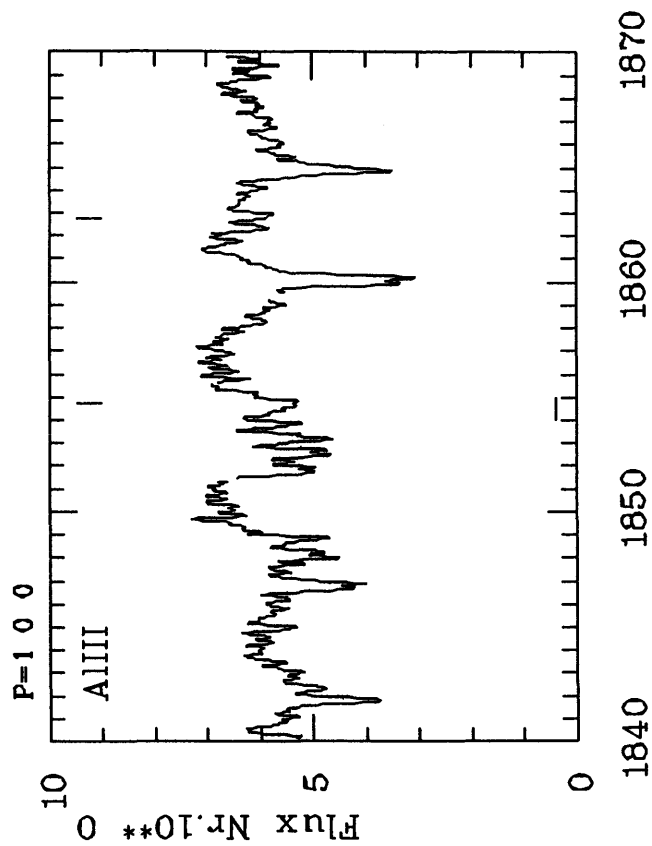
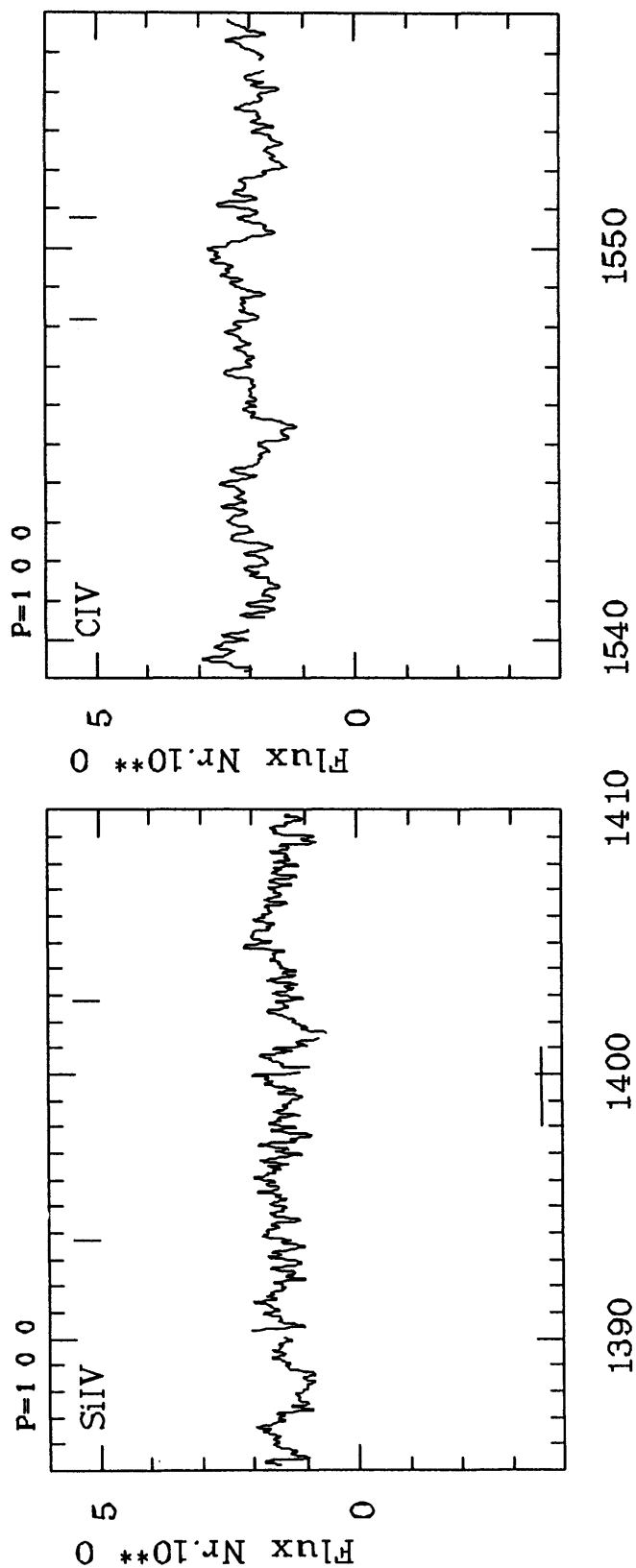


IUE 3 28117 L 86.04.06 - 3 29370 L 86.10.05

ESO B G13853 88.10.26
ESO R G13796 88.10.22

HD 42111 A1IVsh

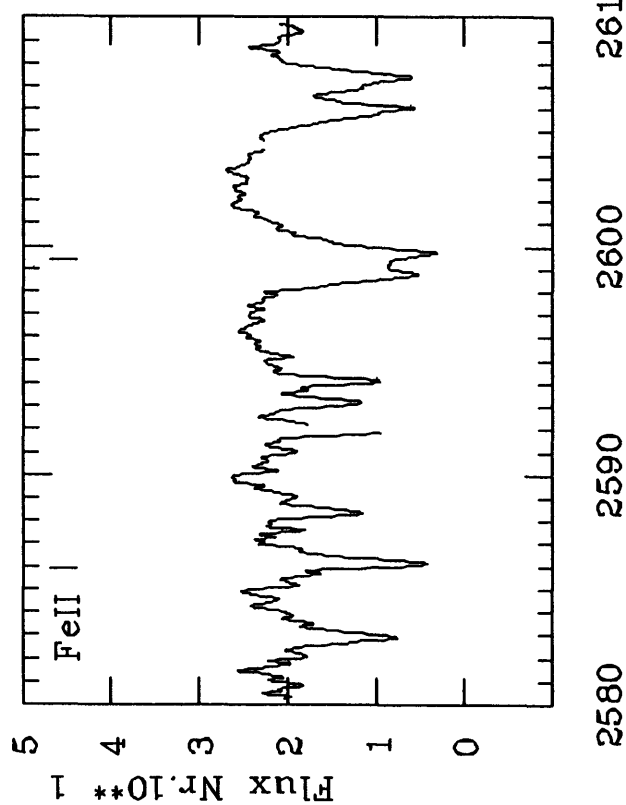
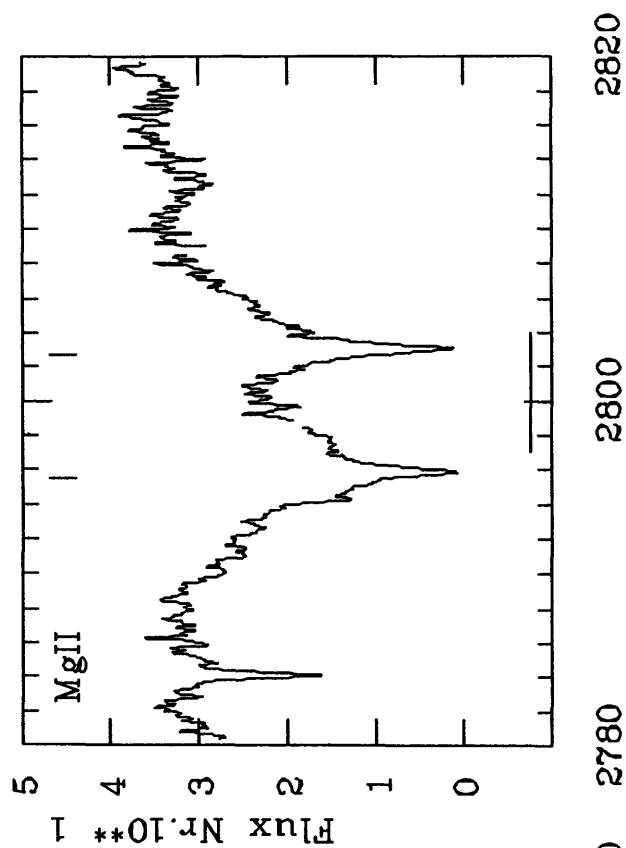
vsini 180



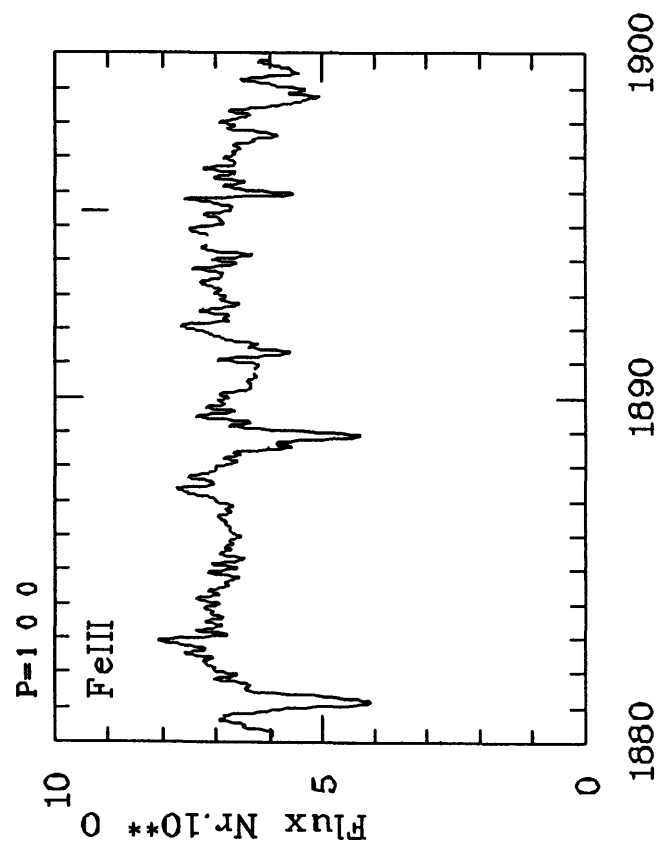
IUE 3 18821 L 82.12.19
 IUE 2 14849 L 82.12.19

HD 42111 A1IVsh

vsini 180

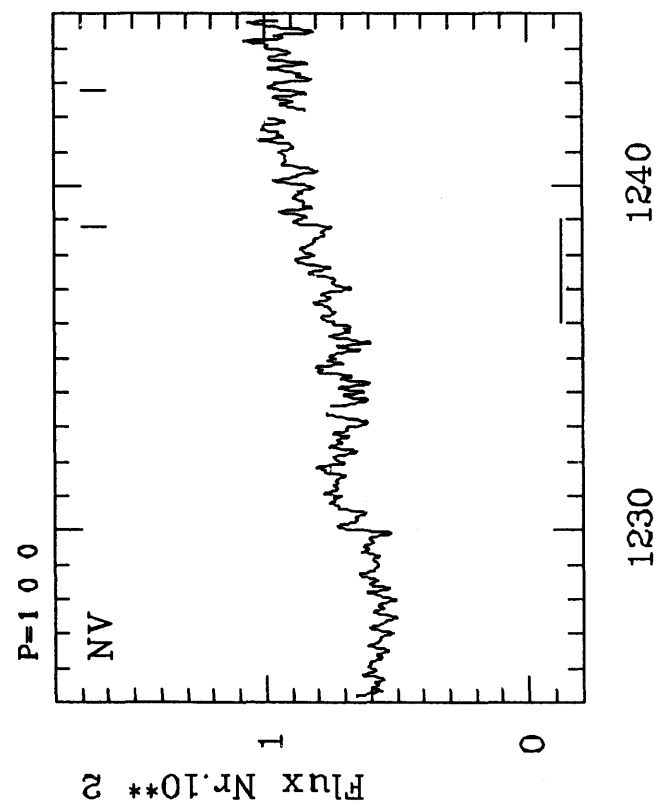
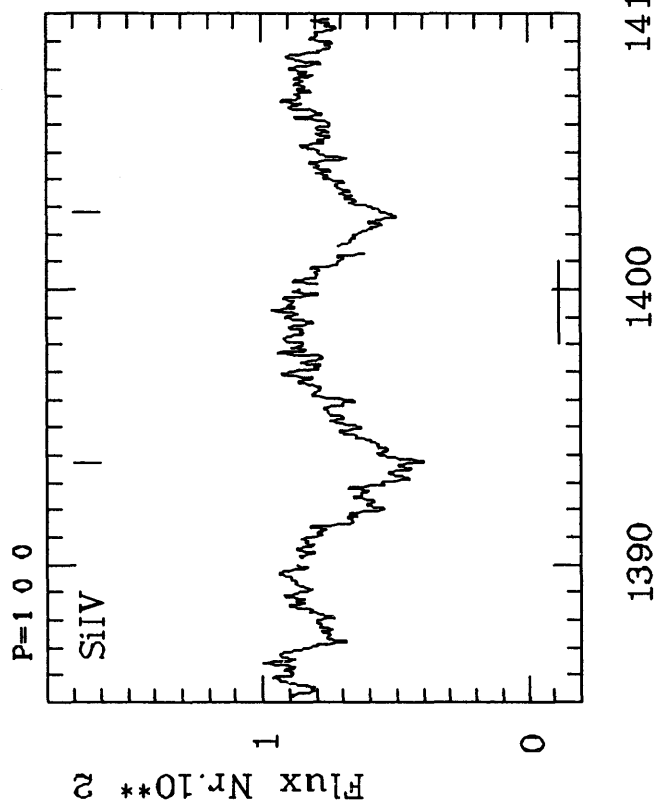
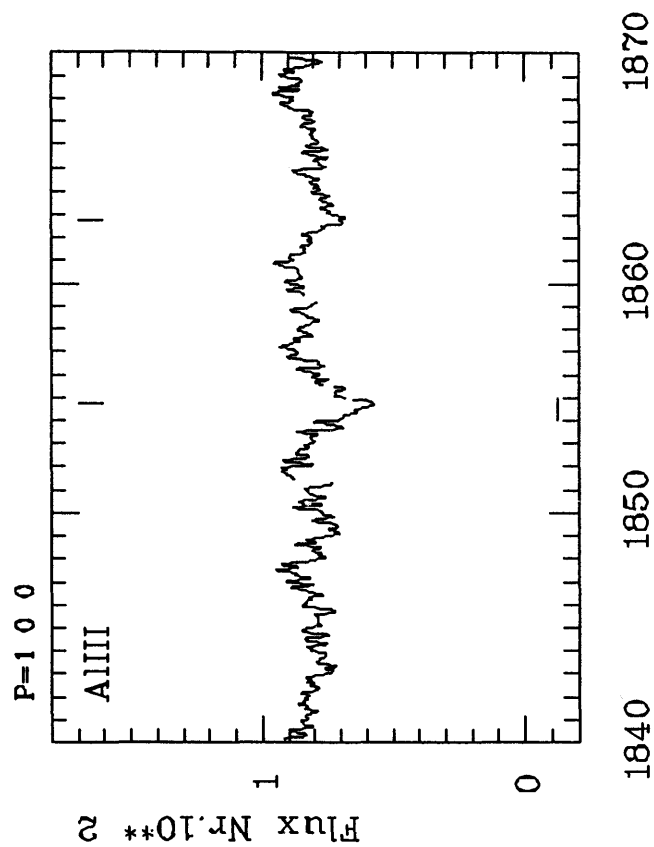
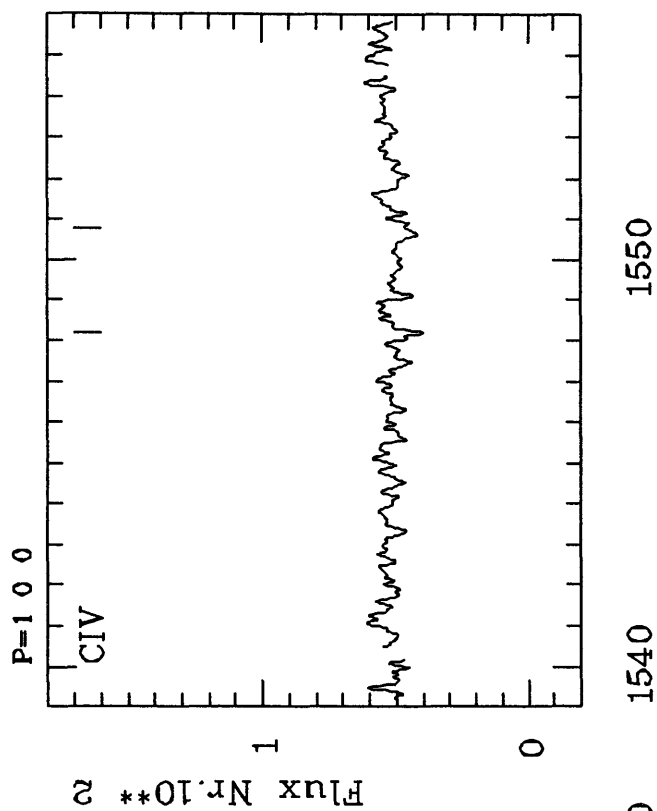


IUE 3 18821 L 82.12.19
IUE 2 14849 L 82.12.19



HD 43544 B3Ve

vsini 300

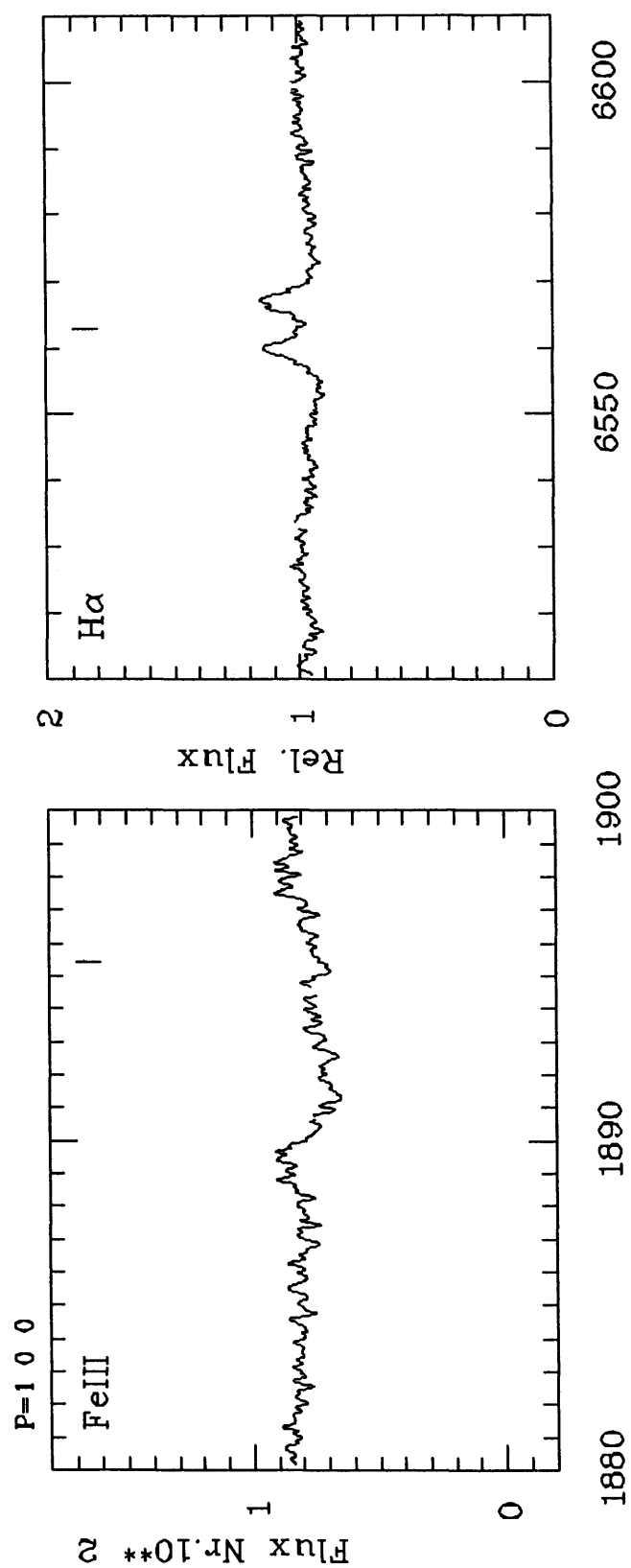


IUE 3 21911 L 83.12.30

ESO R G13817 88.10.23

HD 43544 B3Ve

vsini 300



IUE 3 21911 L 83.12.30

-

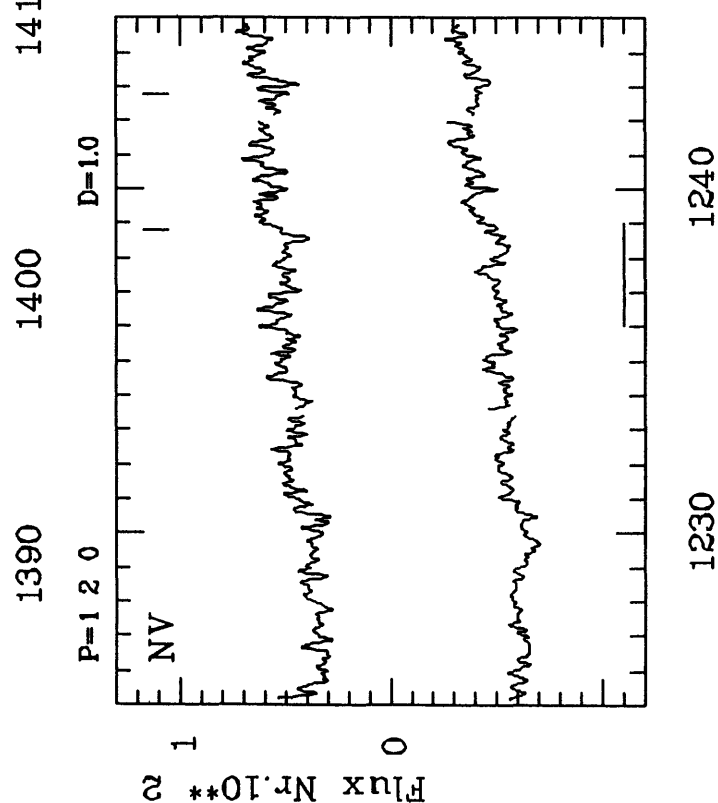
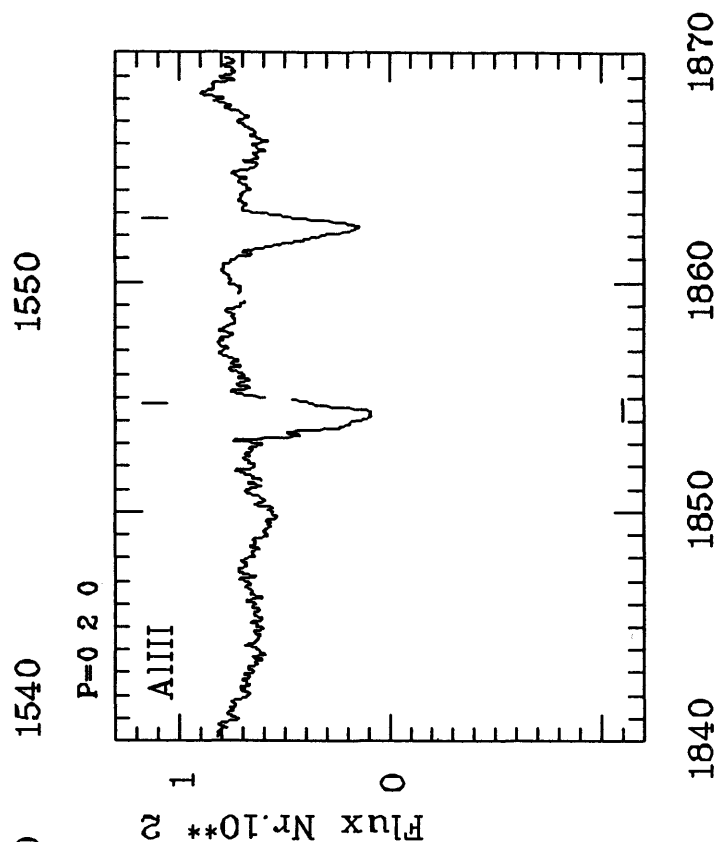
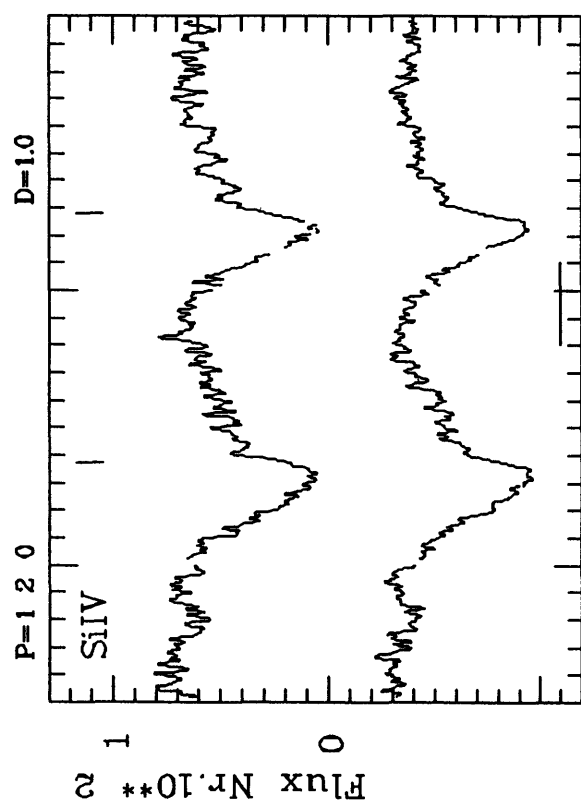
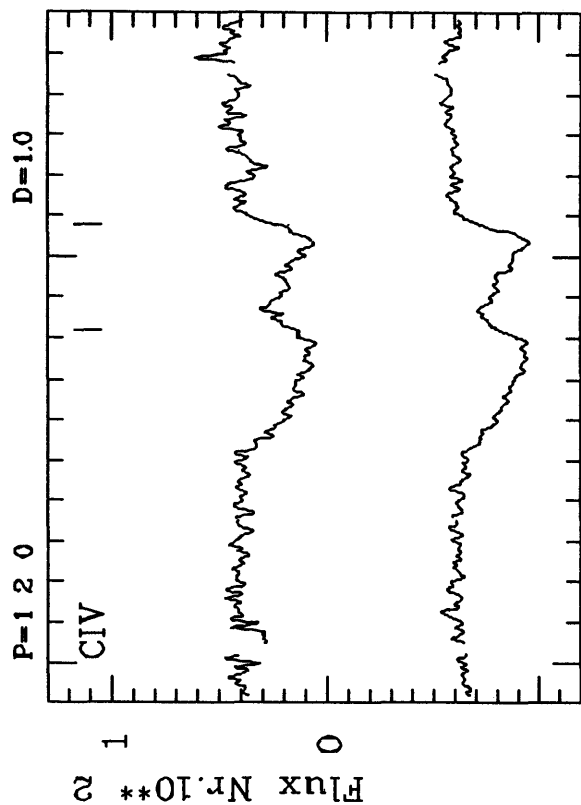
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ESO R G13817 88.10.23

HD 44458

B1.5IVe

vsini 200



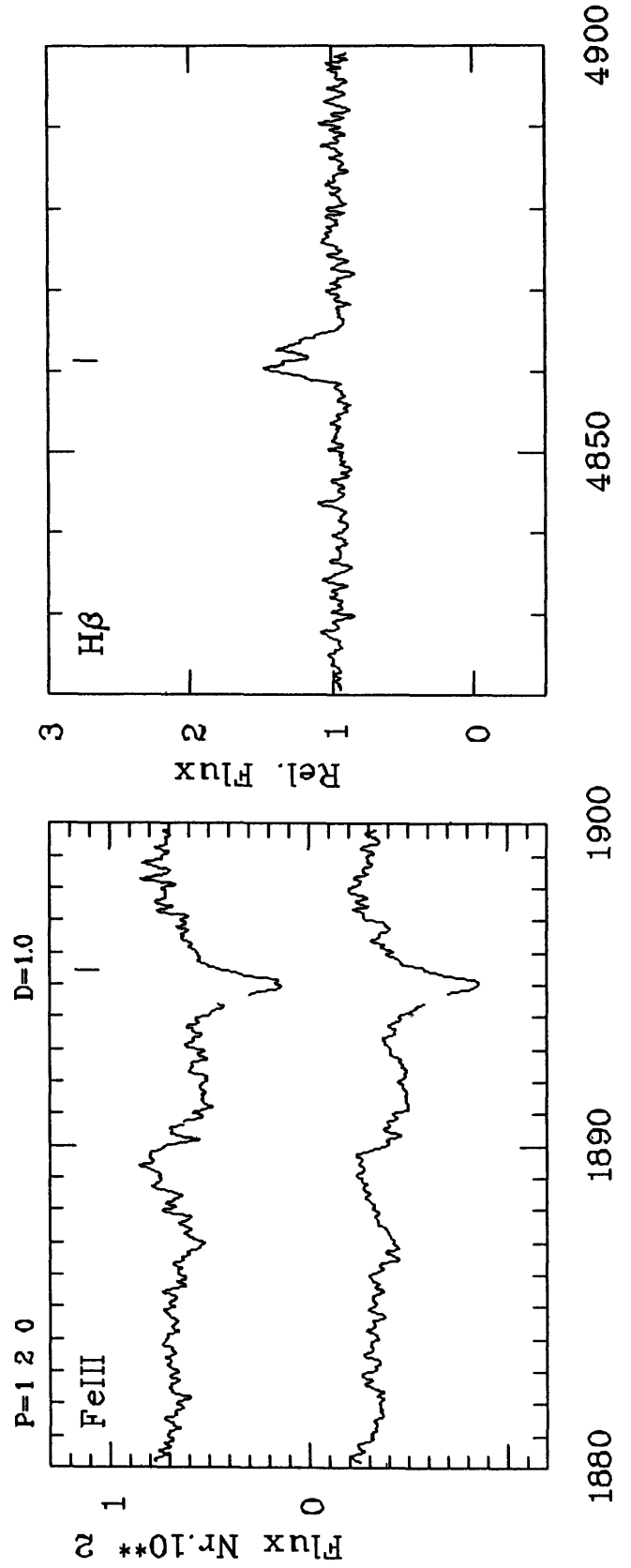
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OHP B GA3052

77.03.03

HD 44458 B1.5IVe

vsini 200



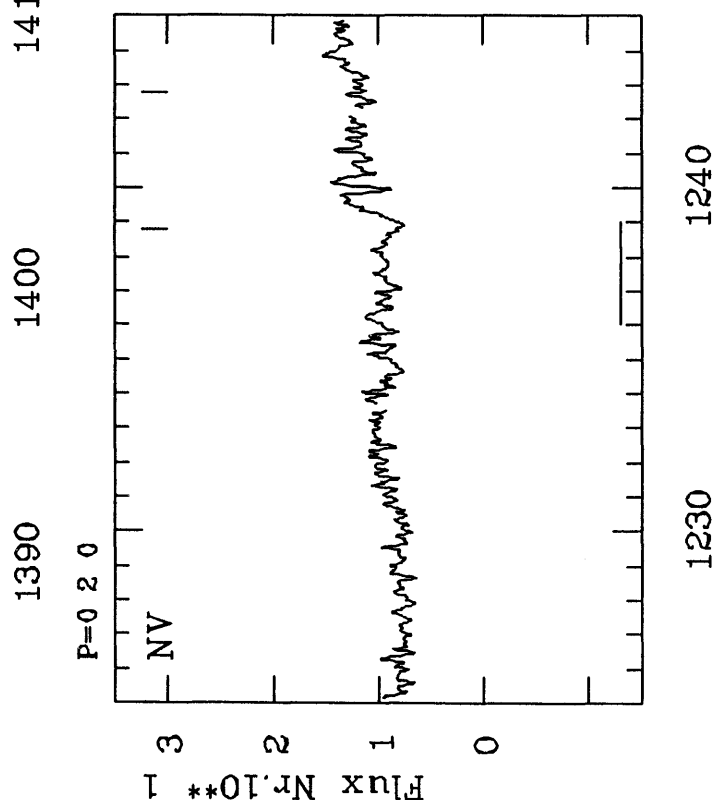
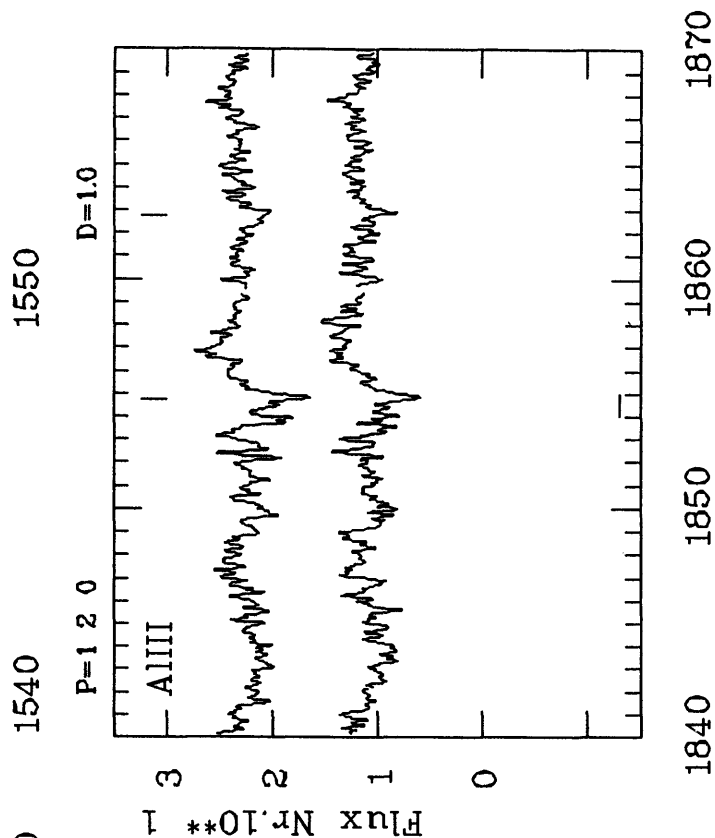
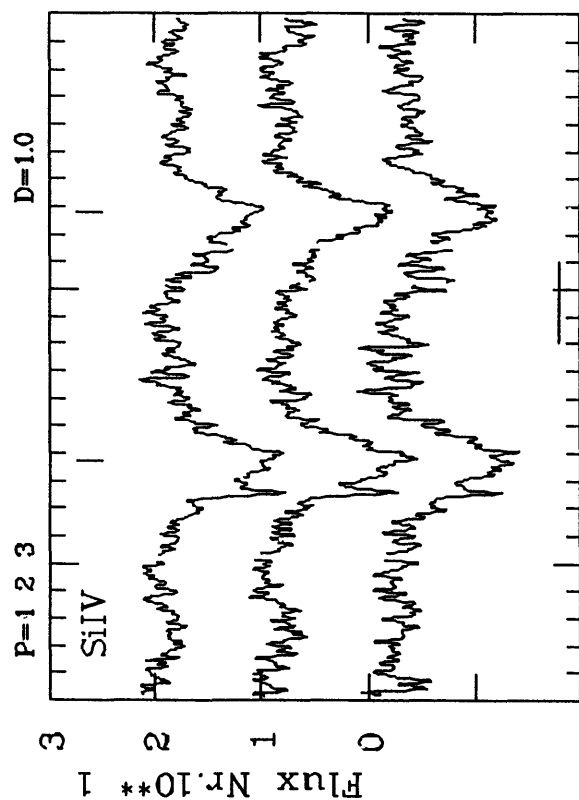
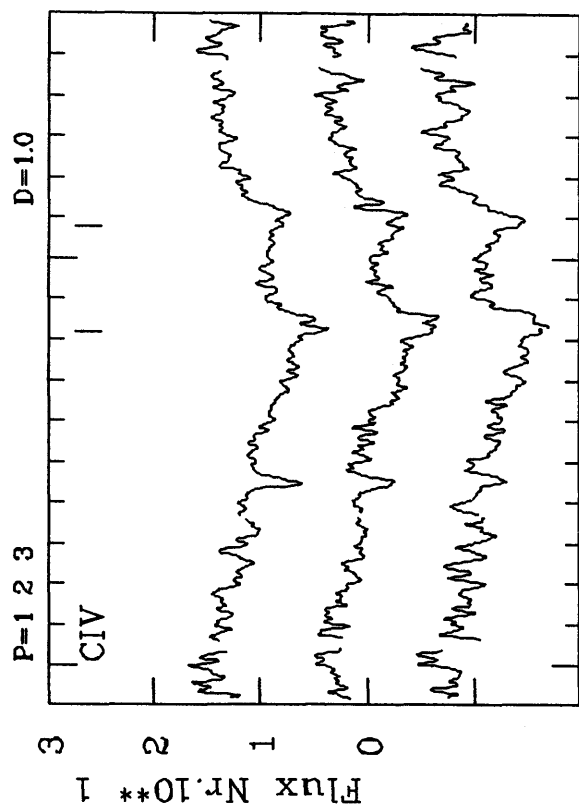
IUE 3 21912 L 83.12.30 - 3 21917 L 83.12.30

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OHP B GA3052 77.03.03

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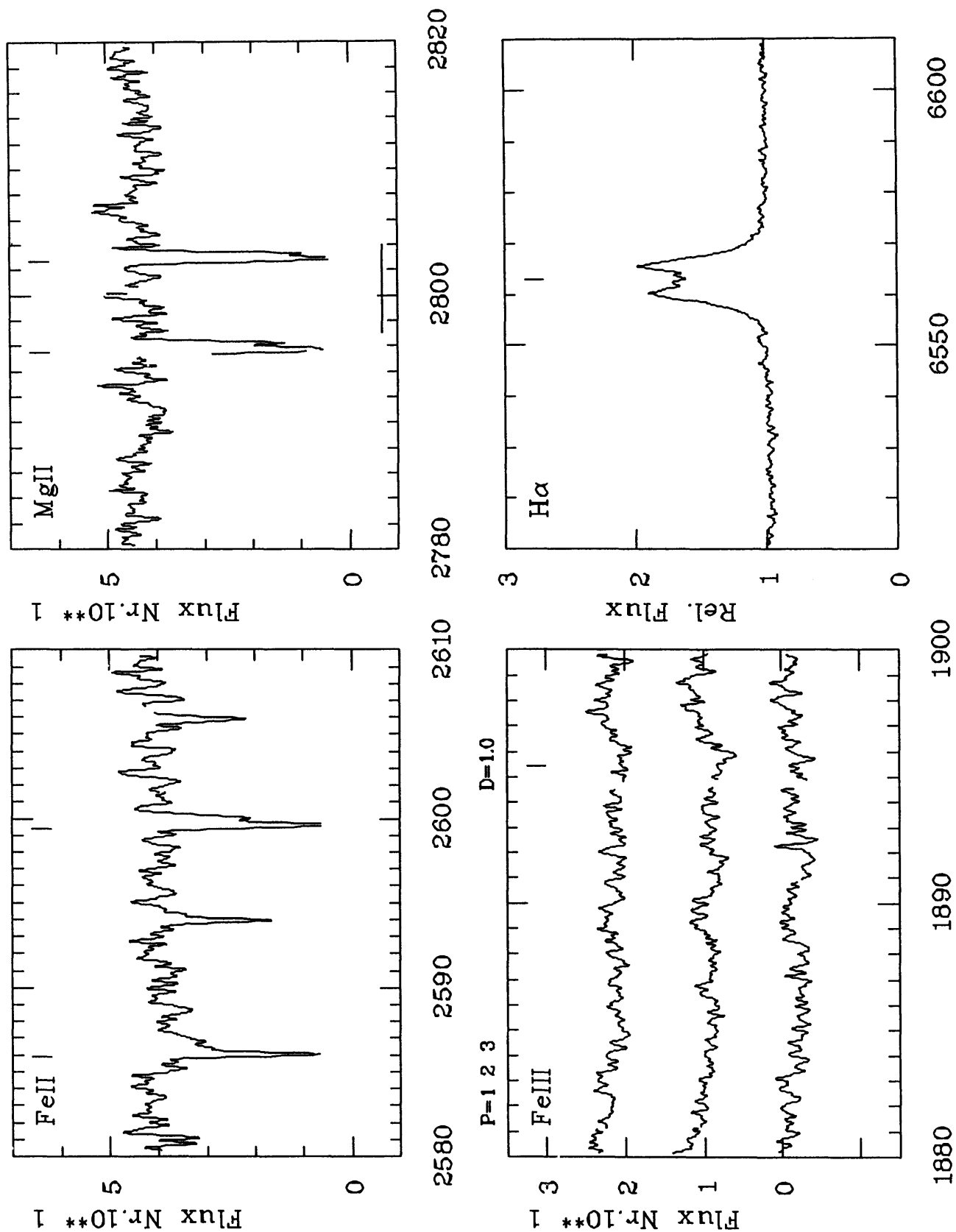
HD 45314 09pe



IUE 3 18756 L 82.12.08 - 3 24240 L 84.10.20 - 3 26991 L 85.10.27
 IUE 1 07004 L 85.10.27

OHP R GA8368 88.11.25

HD 45314 09pe

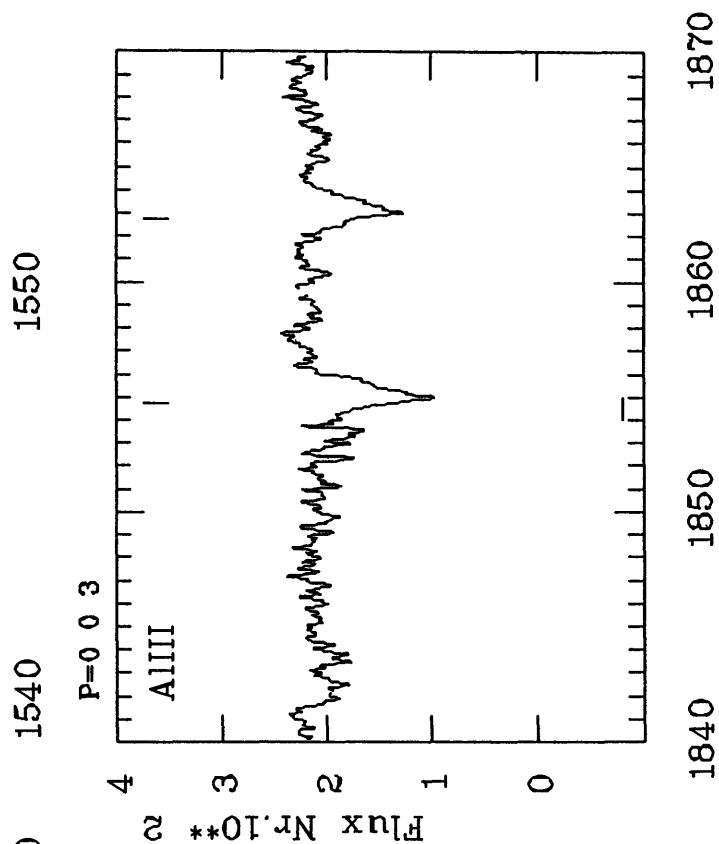
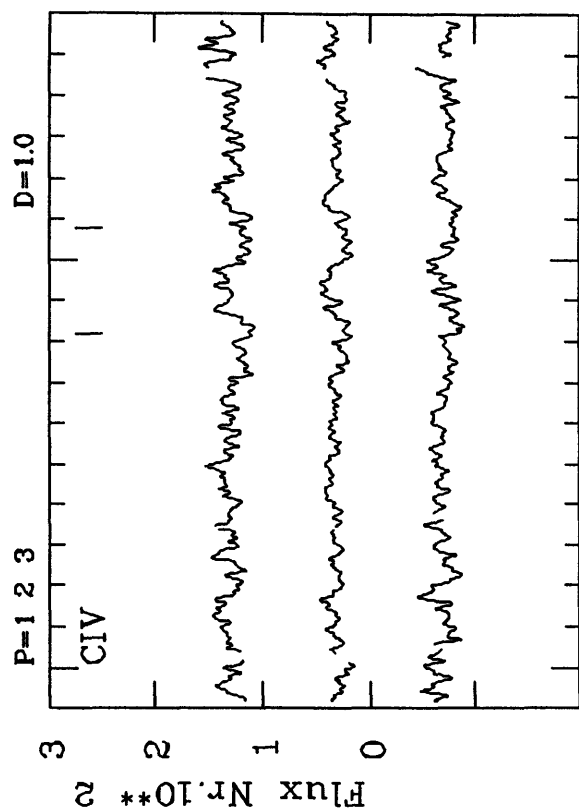


IUE 3 18756 L 82.12.08 - 3 24240 L 84.10.20 - 3 26991 L 85.10.27
 IUE 1 07004 L 85.10.27

OHP R GA8368 88.11.25

HD 45542 B6IVe

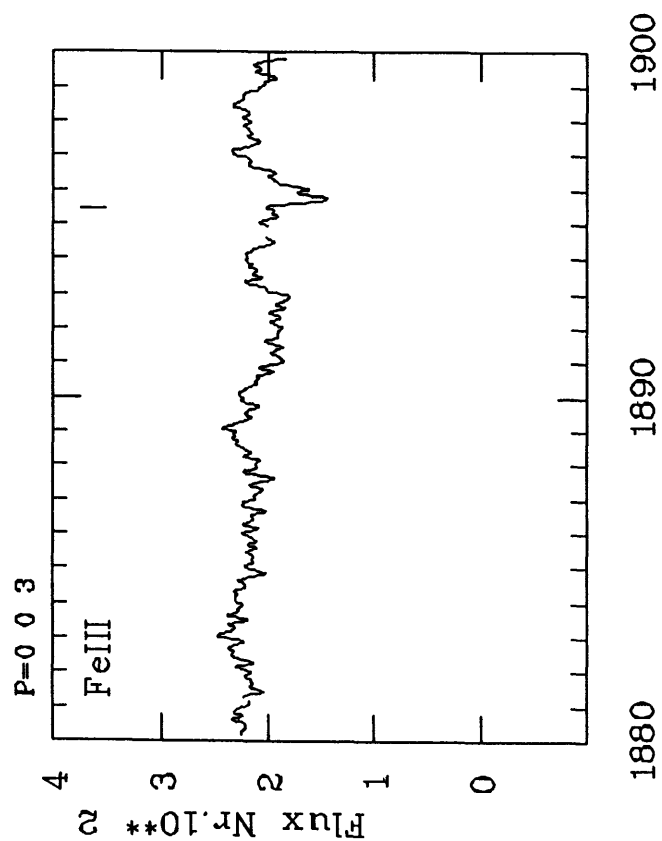
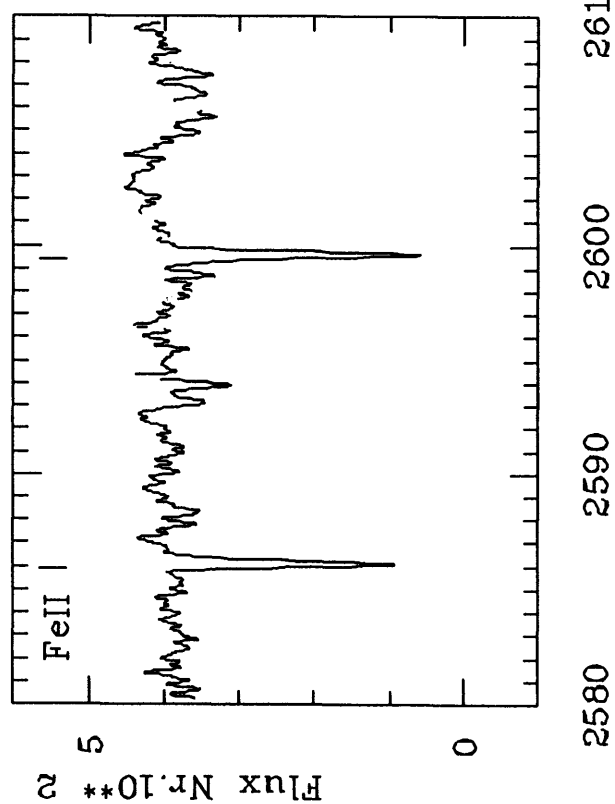
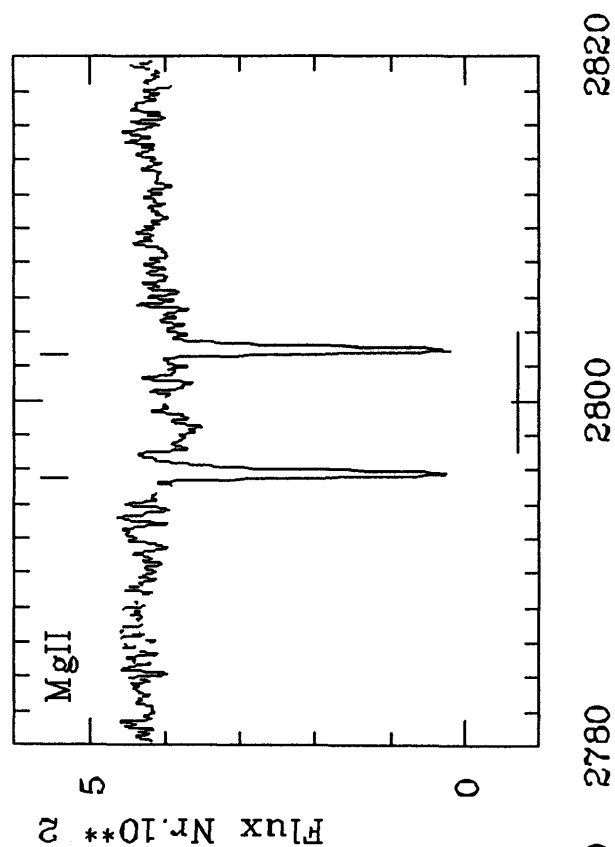
vsini 170



IUE 3 27662 L 86.02.05 - 3 28104 L 86.04.05 - 3 29393 L 86.10.07
 IUE 1 07631 L 86.02.05
 OHP B GB8206 84.02.07
 OHP R GA8347 88.11.21

HD 45542 B6IVe

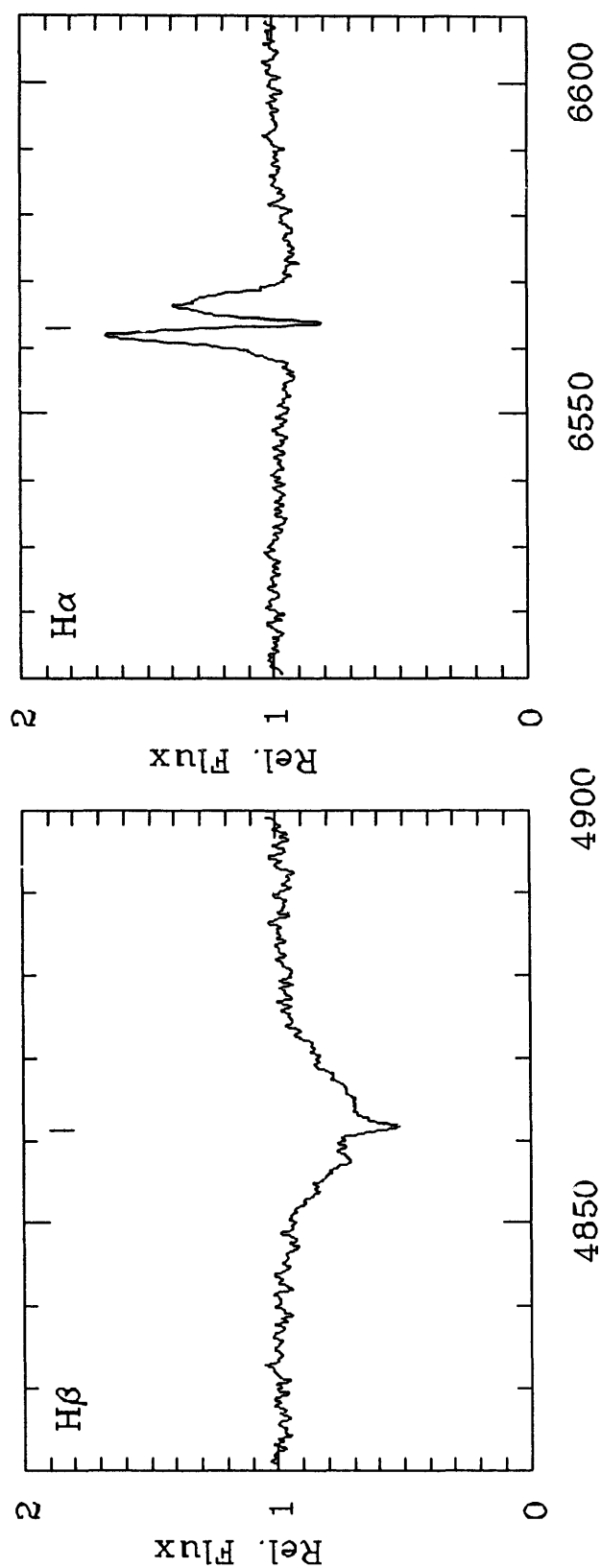
vsini 170



IUE 3 27662 L 86.02.05 - 3 28104 L 86.04.05 - 3 29393 L 86.10.07
 IUE 1 07631 L 86.02.05
 OHP B GB8206 84.02.07
 OHP R GA8347 88.11.21

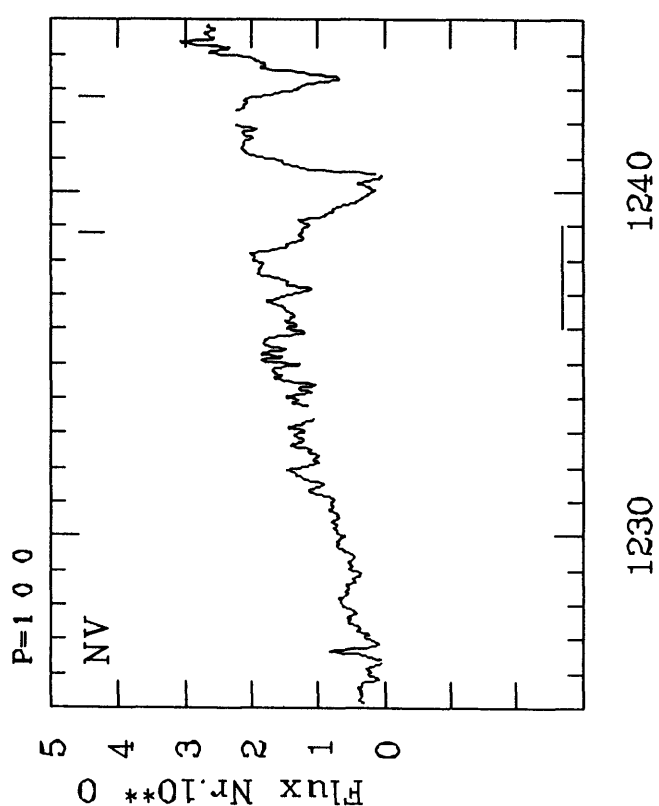
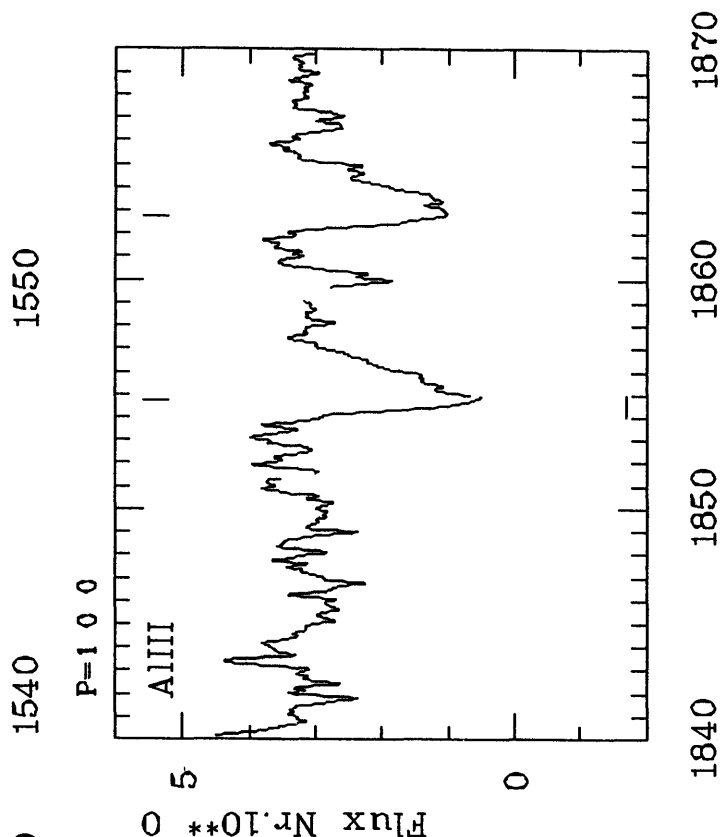
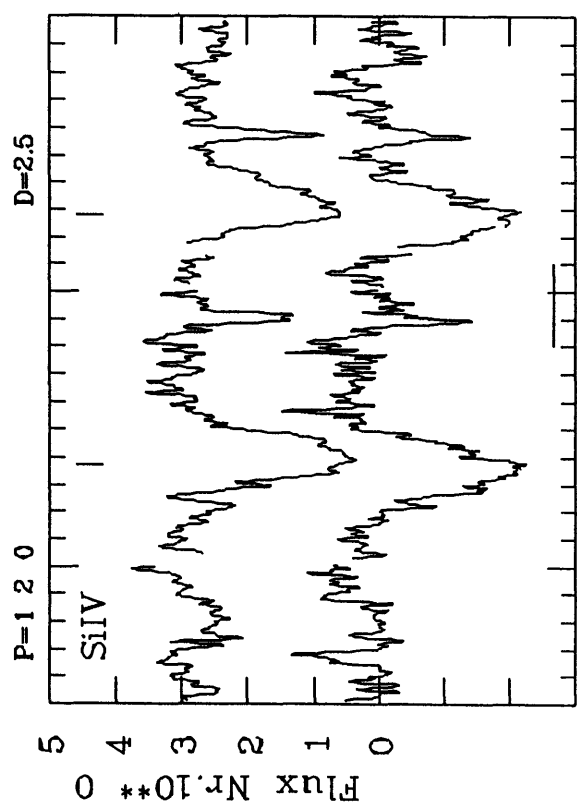
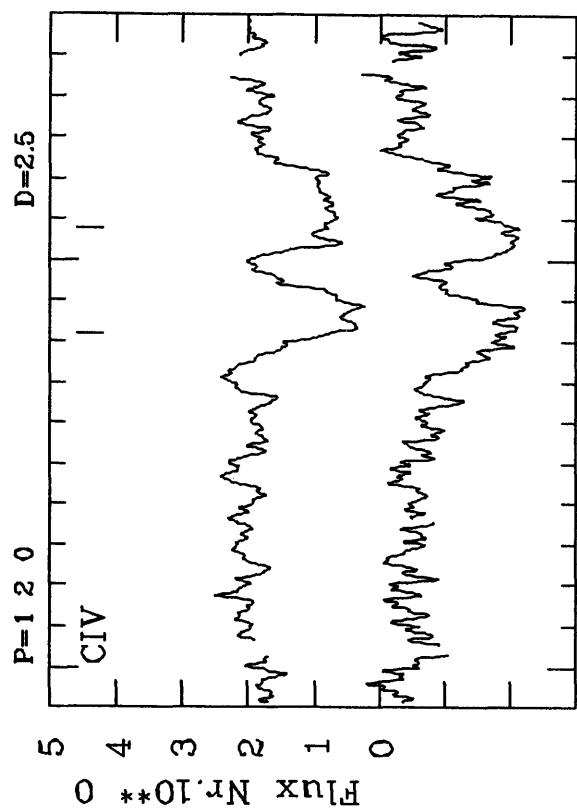
HD 45542 B6IVe

vsini 170



IUE 3 27662 L 86.02.05 - 3 28104 L 86.04.05 - 3 29393 L 86.10.07
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 OHP B GB8206 84.02.07
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HD 45677 B9pesh

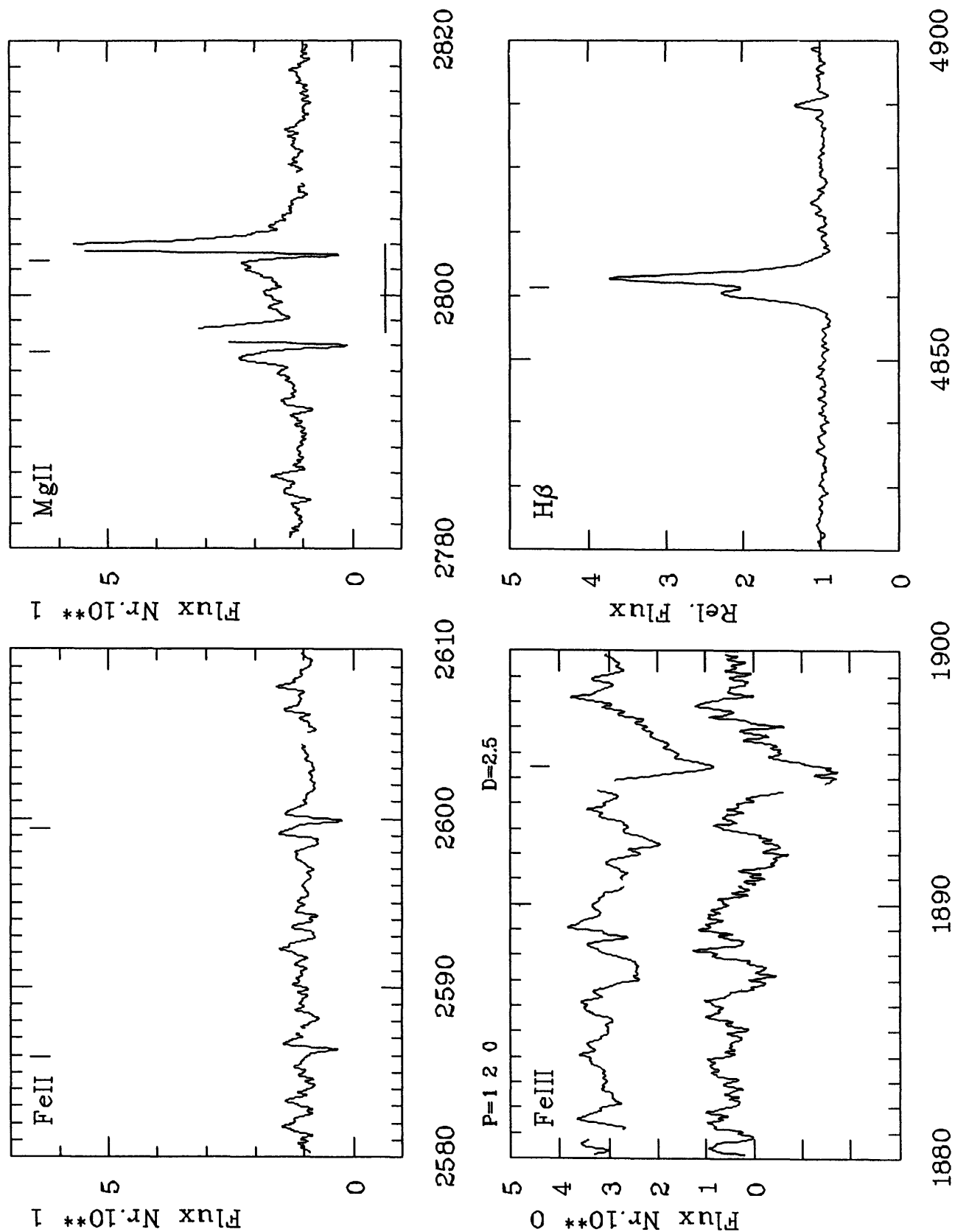


IUE 3 04340 L 79.02.22 - 3 15991 L 82.01.08

IUE 2 04283 L 79.04.17

ESO B F9273 88.10.24

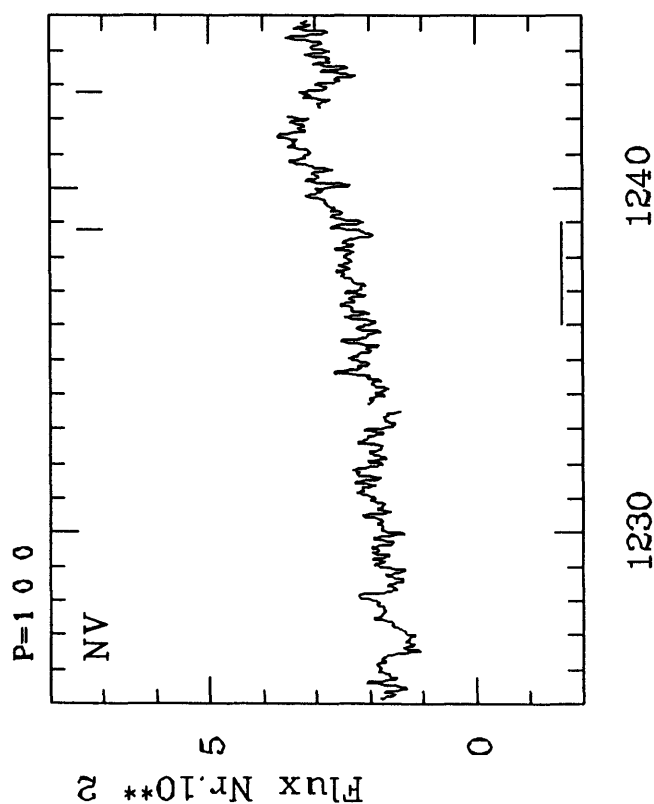
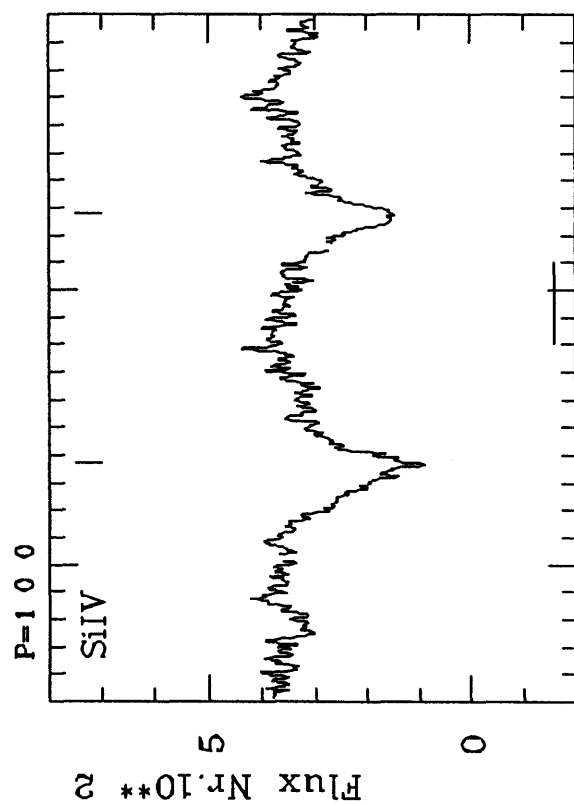
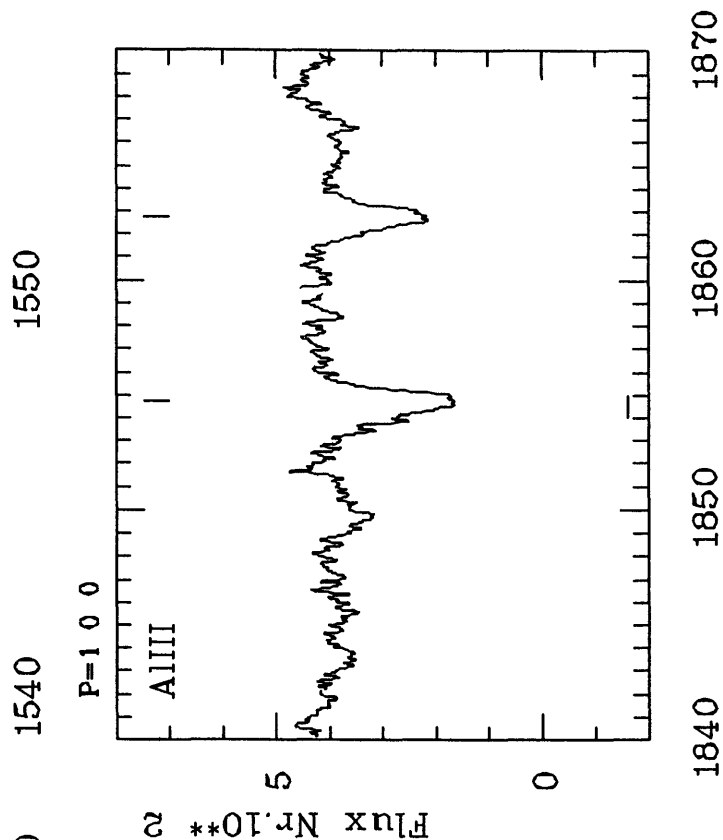
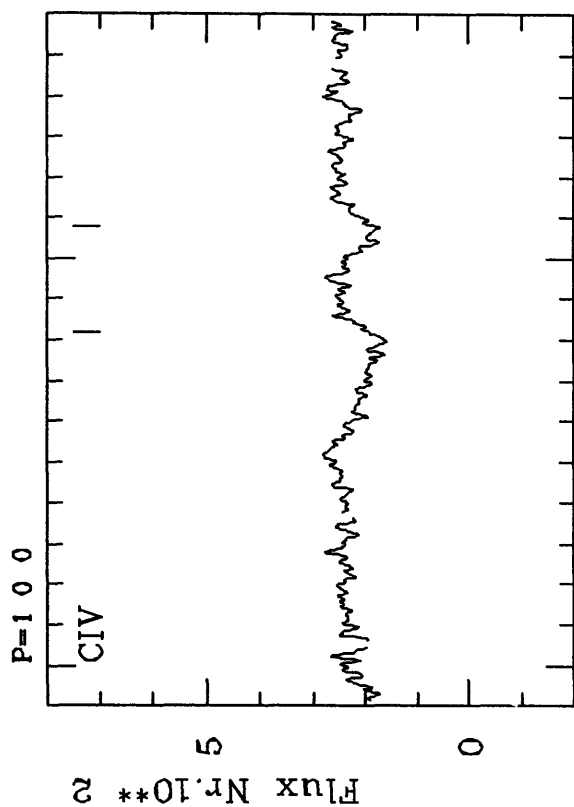
HD 45677 B9pesh



IVE 3 04340 L 79.02.22 - 3 15991 L 82.01.08
 IVE 2 04283 L 79.04.17
 ESO B F9273 88.10.24

HD 45725 B4Vesh

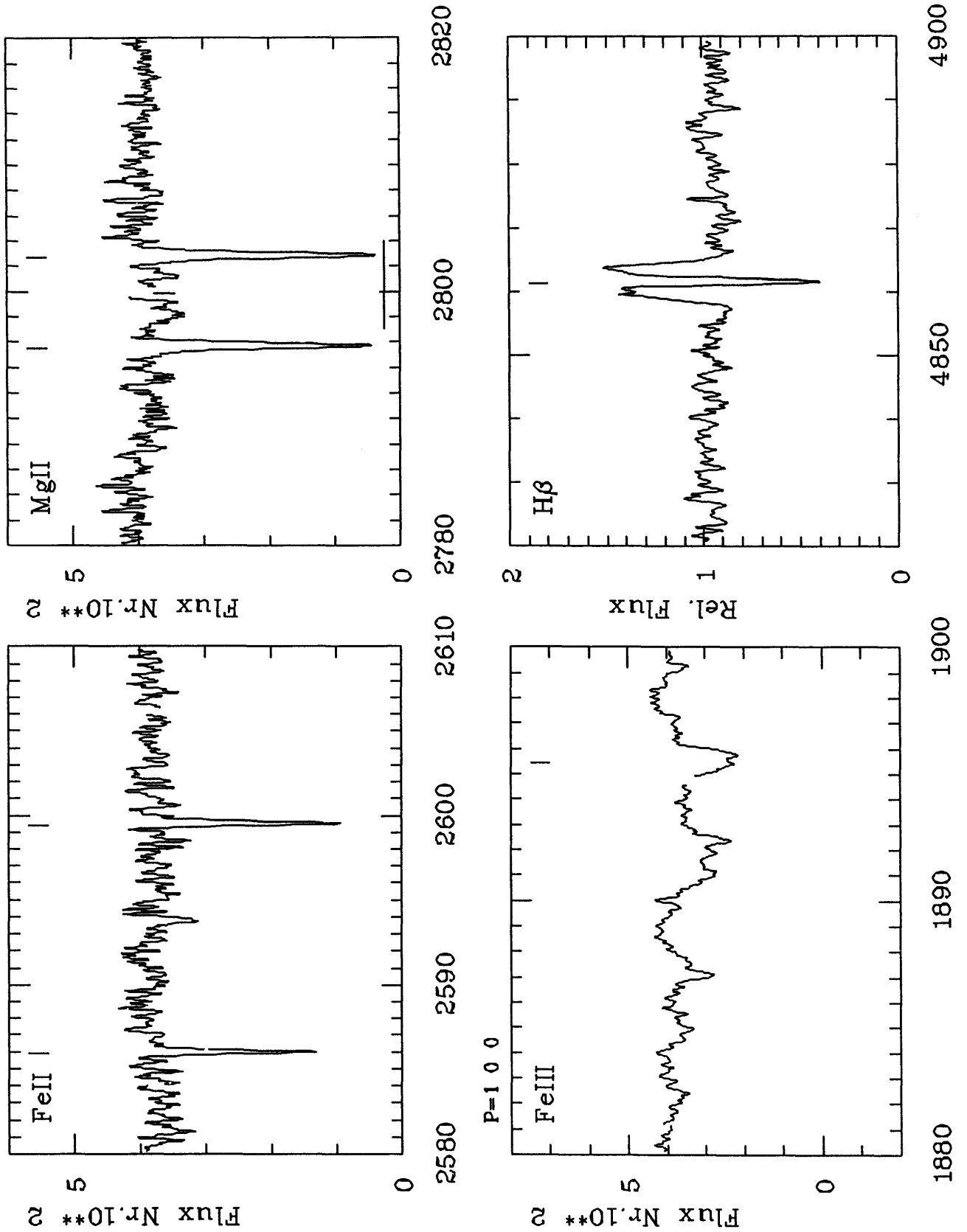
vsini 300



IVE 3 29395 L 86.10.07
 IVE 1 10041 L 87.01.29
 OHP B GA3053 77.03.03

HD 45725 B4Vesh

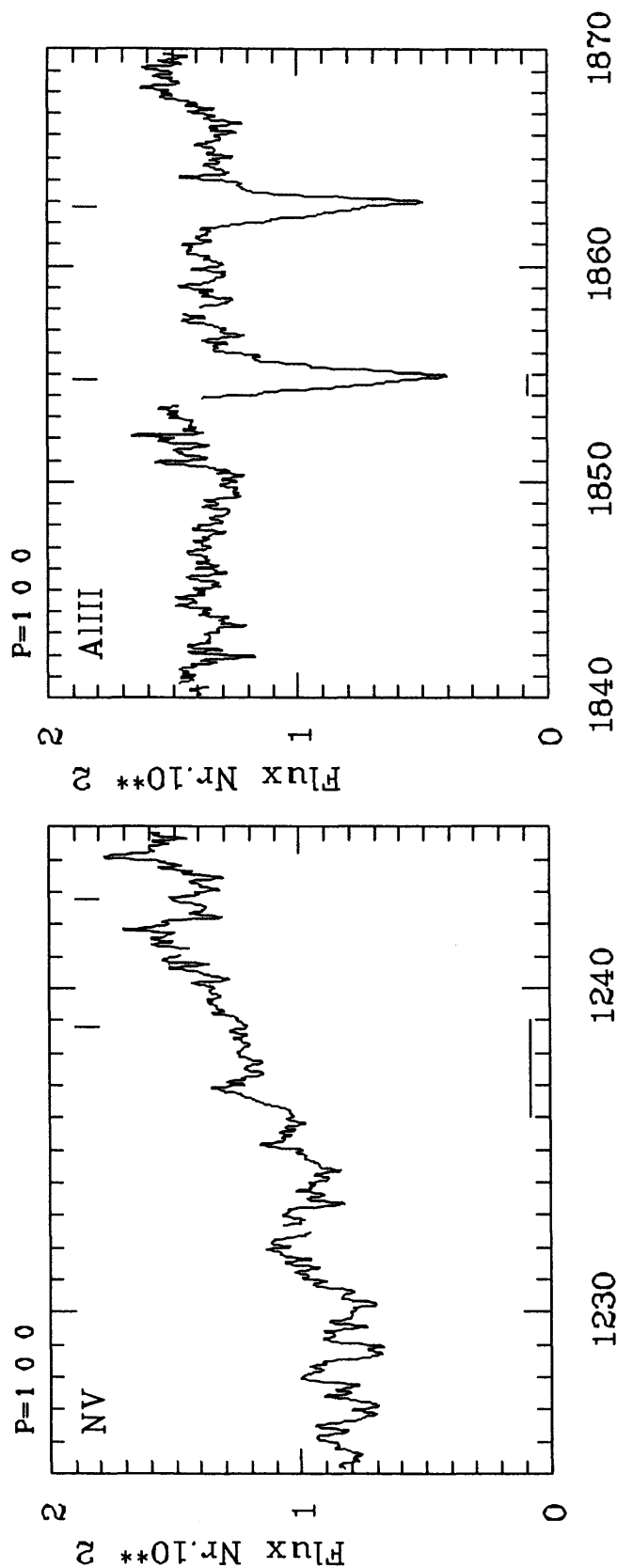
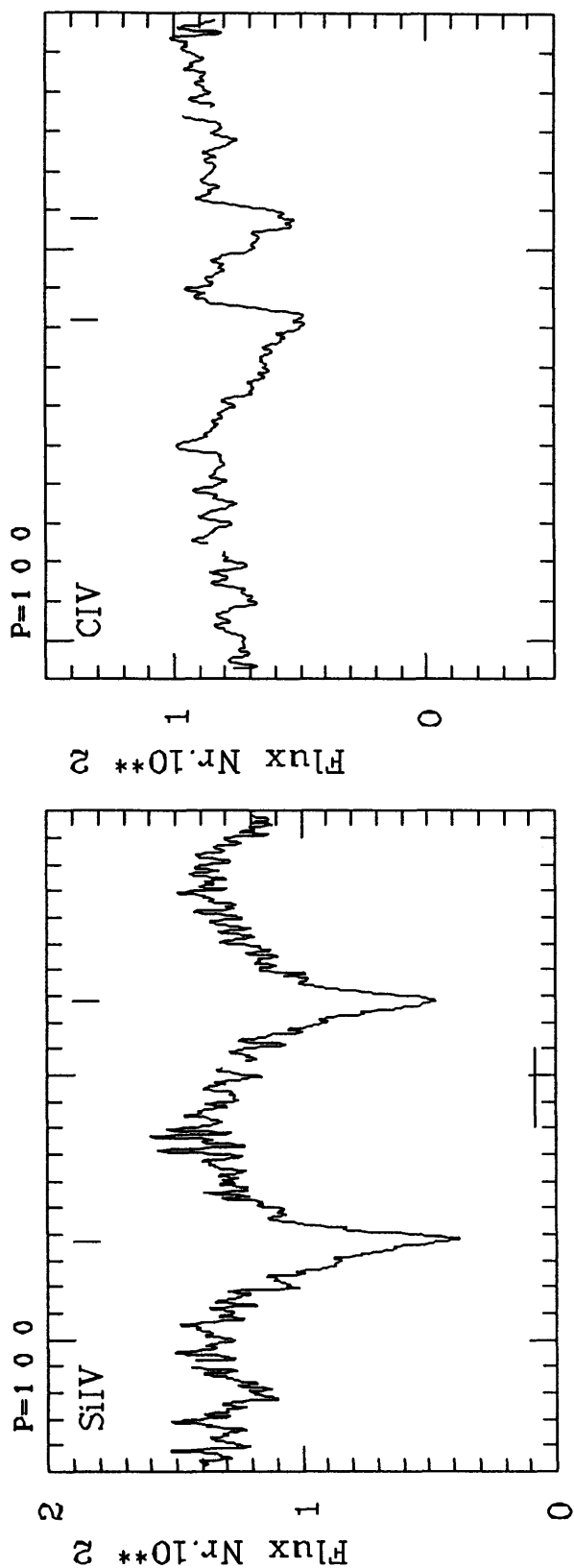
vsini 300



IUE 3 29395 L 86.10.07
 IUE 1 10041 L 87.01.29
 OHP B GA3053 77.03.03

HD 45726 B3ne

vsini 125

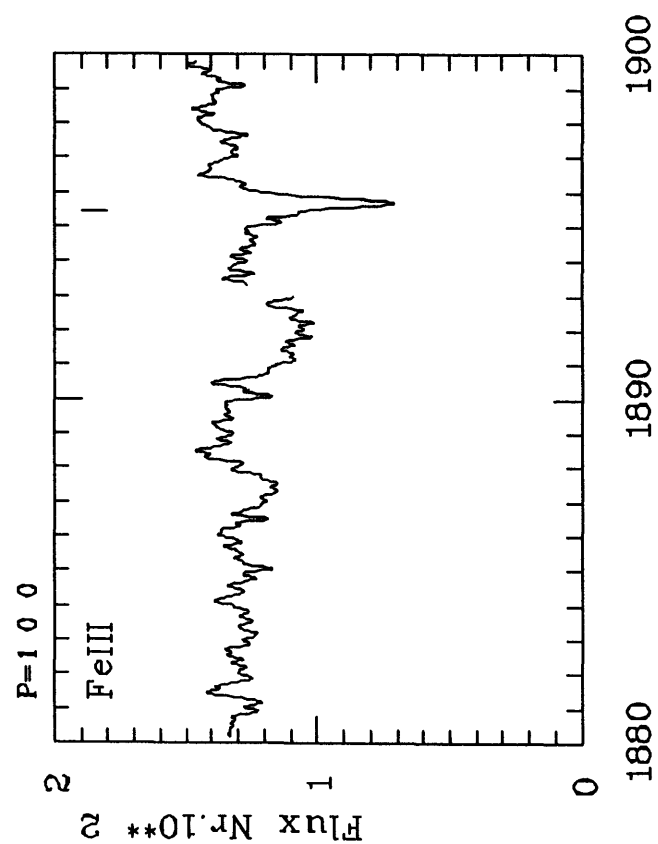


IUE 3 30701 S 87.04.04

HD 45726

B3ne

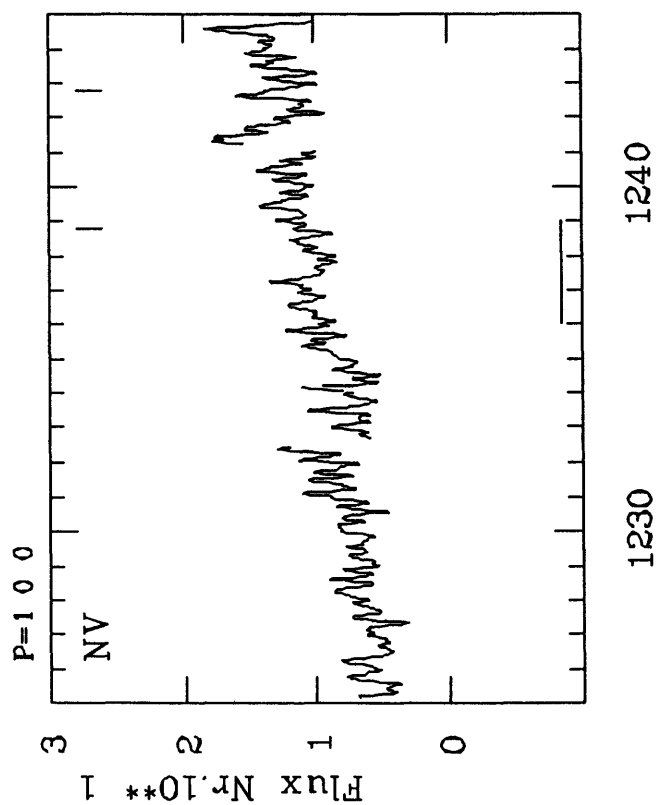
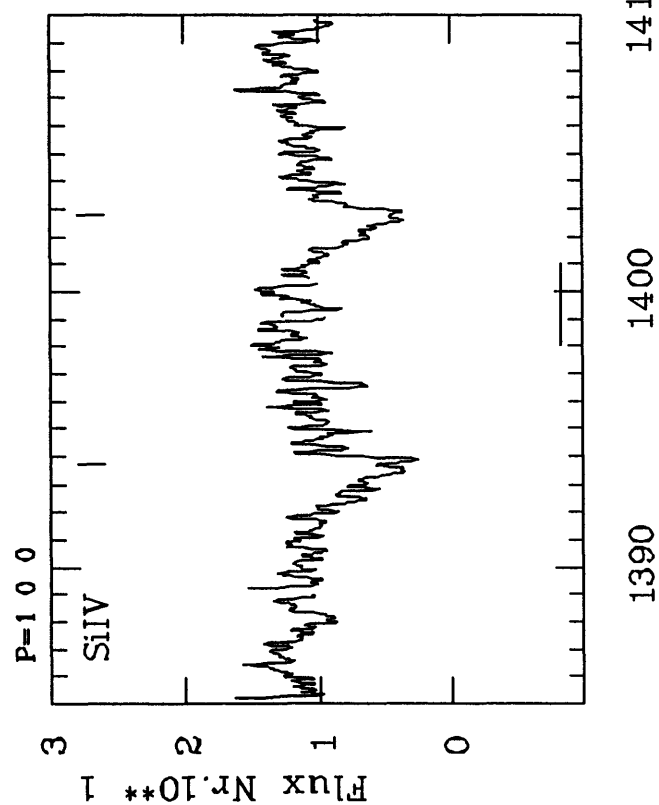
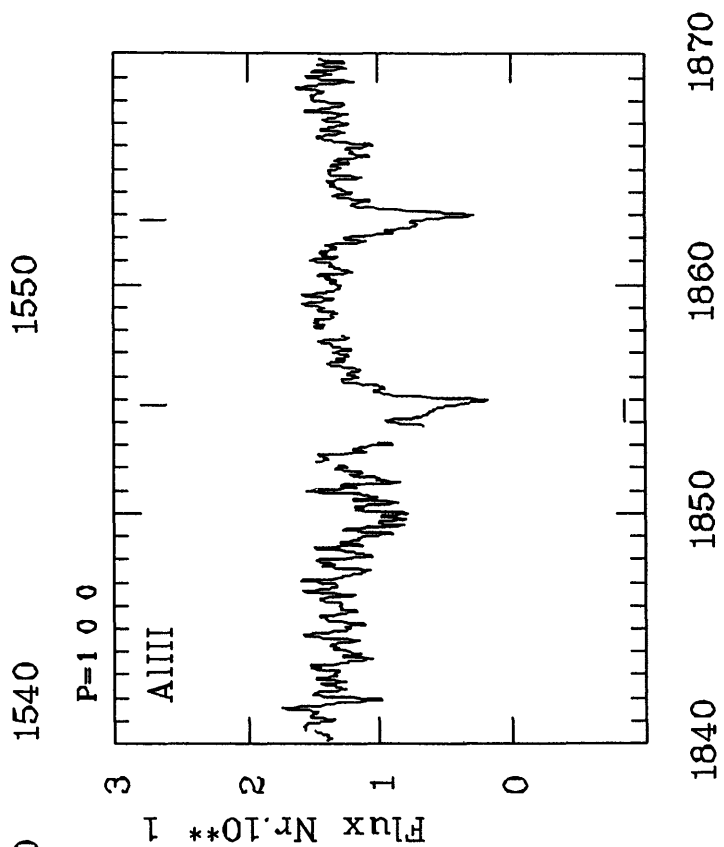
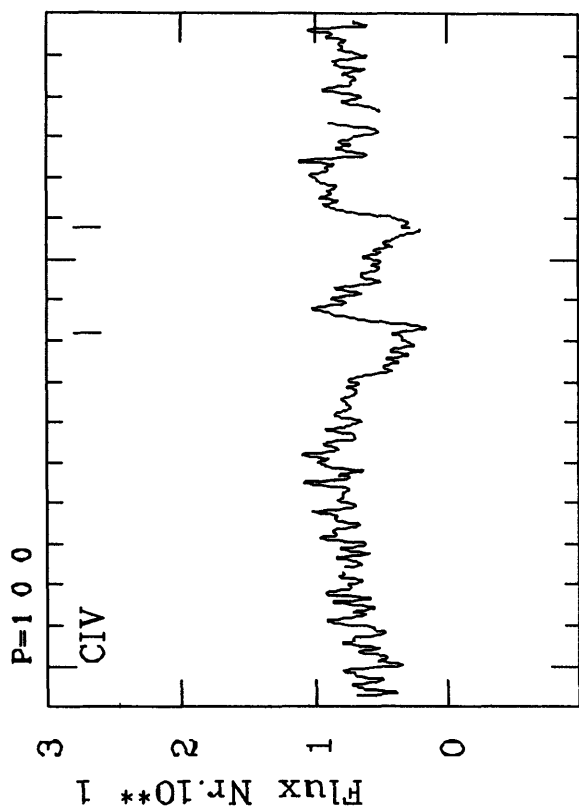
vsini 125



IUE 3 30701 S 87.04.04

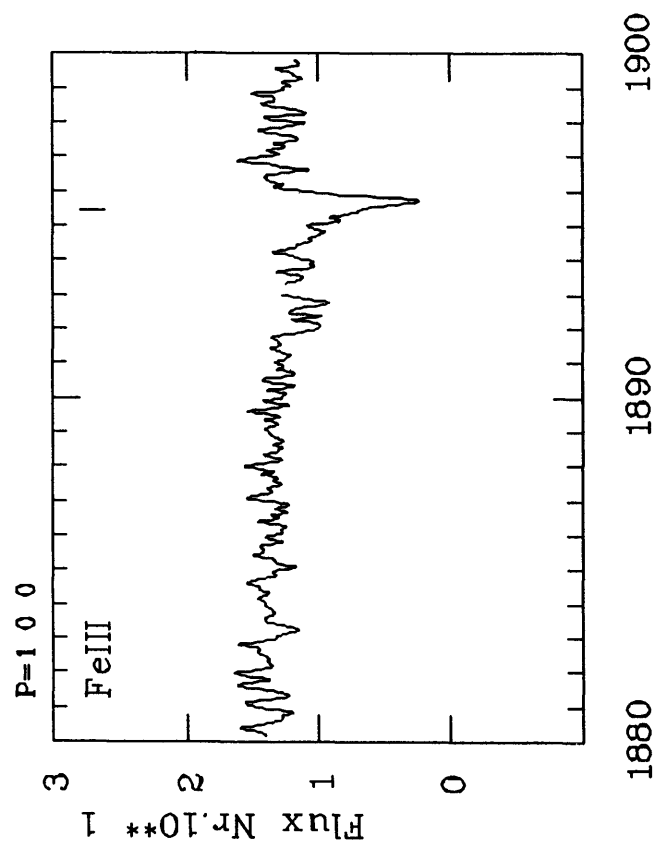
HD 45727 B3e

vsini 330



HD 45727 B3e

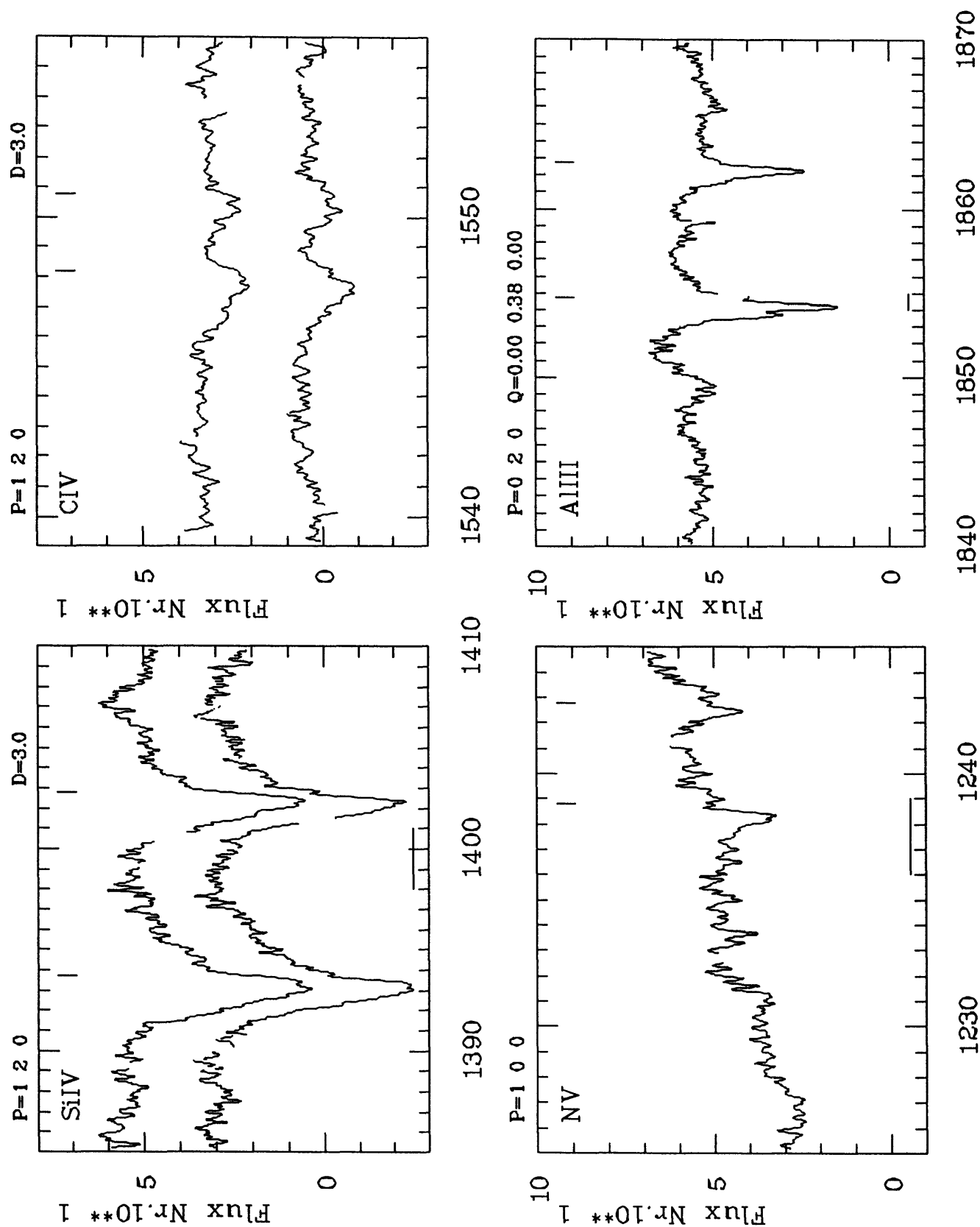
vsini 330



IUE 3 30702 S 87.04.04

HD 45995 B2IVe

vsini 250



IVE 3 09936 S 80.08.28 - 3 16550 L 82.03.17

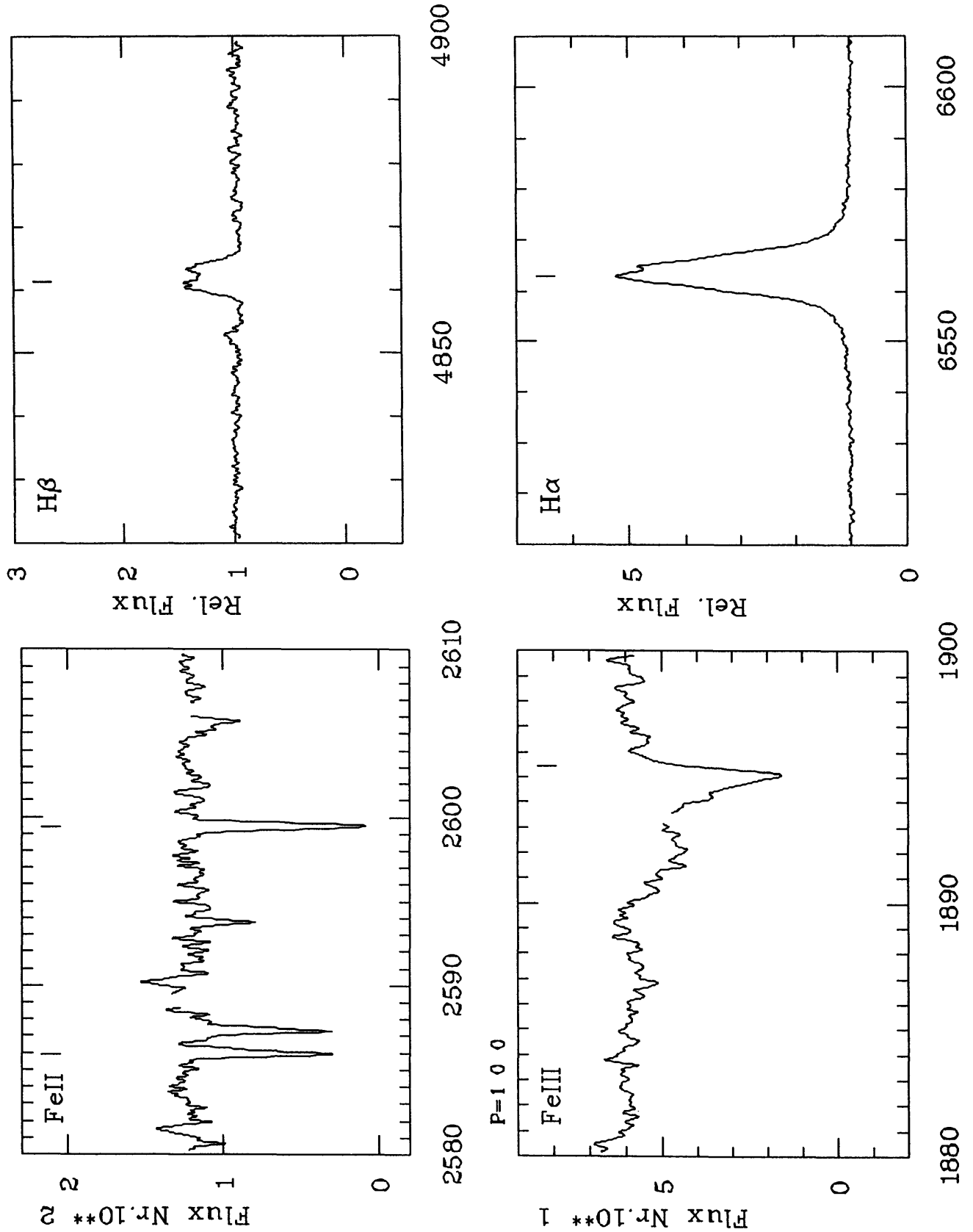
IVE 2 08648 S 80.08.28

OHP B GB8158 84.01.05

OHP R GA5705 84.01.06

HD 45995 B2IVe

vsini 250



IUE 3 09936 S 80.08.28 - 3 16550 L 82.03.17

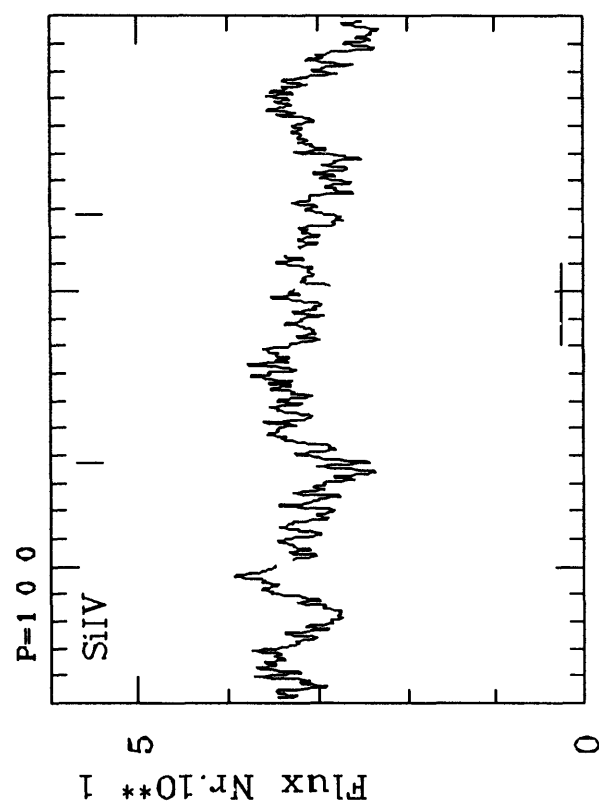
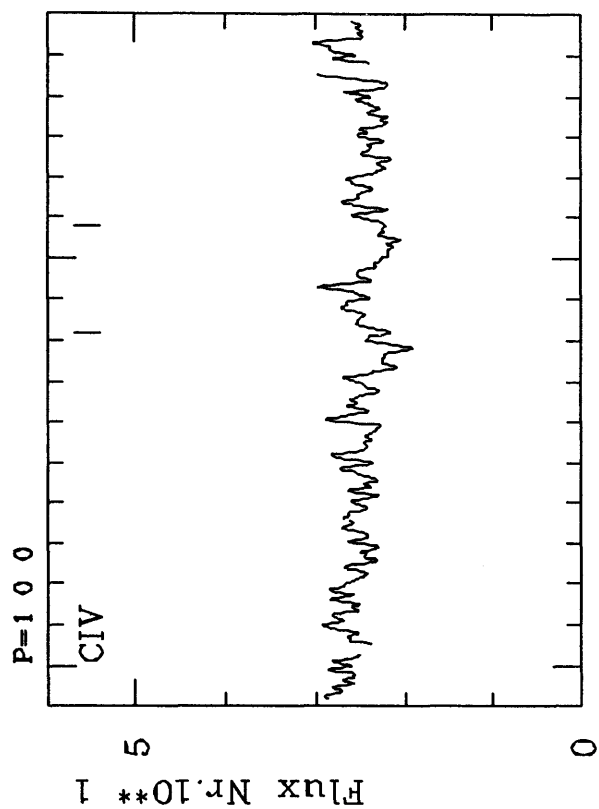
IUE 2 08648 S 80.08.28

OHP B GB8158 84.01.05

OHP R GA5705 84.01.06

HD 47054 B8IVe

vsini 260



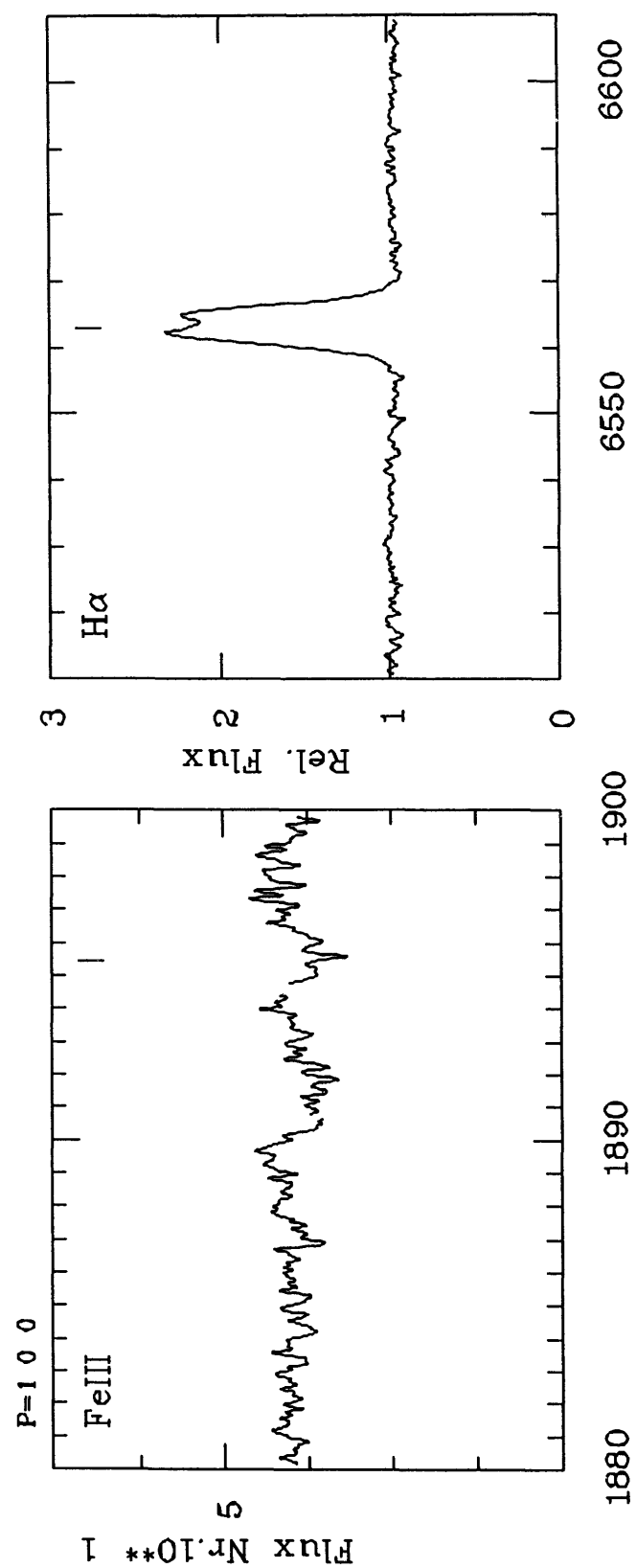
IUE 3 21909 L 83.12.30

OHP R GA7848

87.11.27

HD 47054 B8IVe

vsini 260



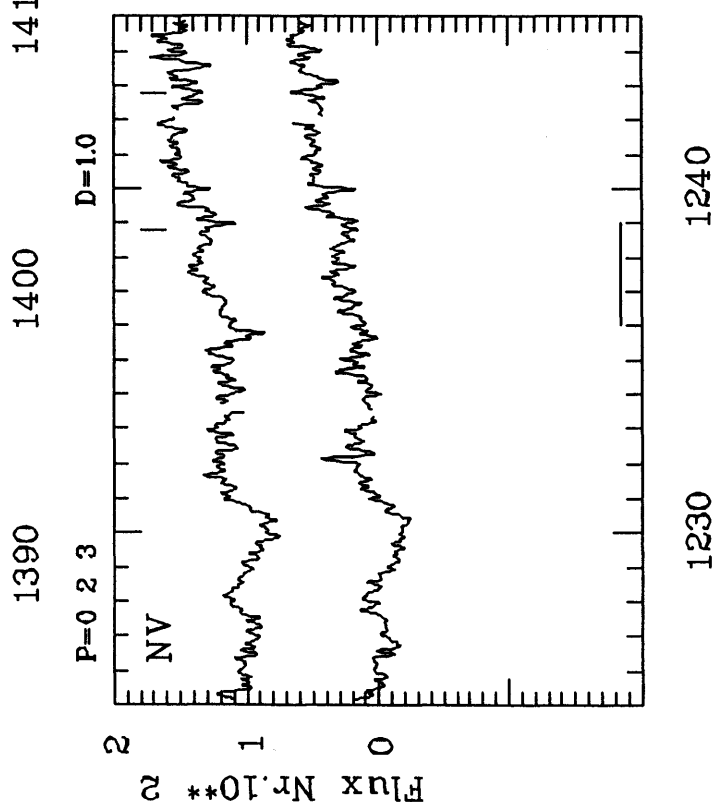
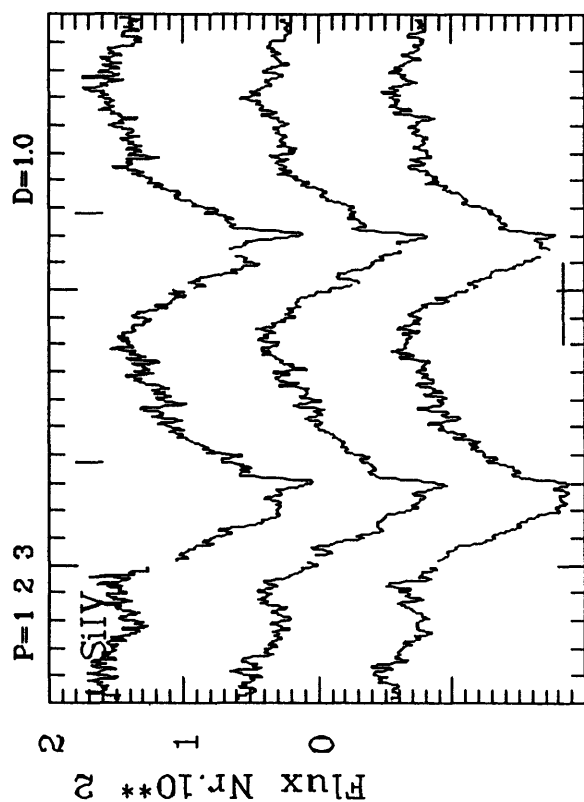
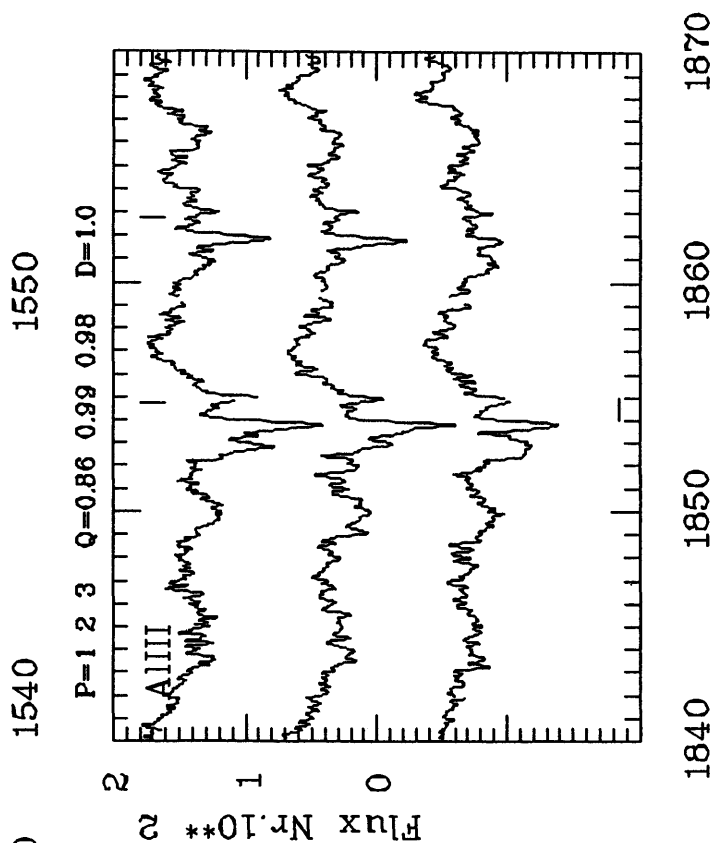
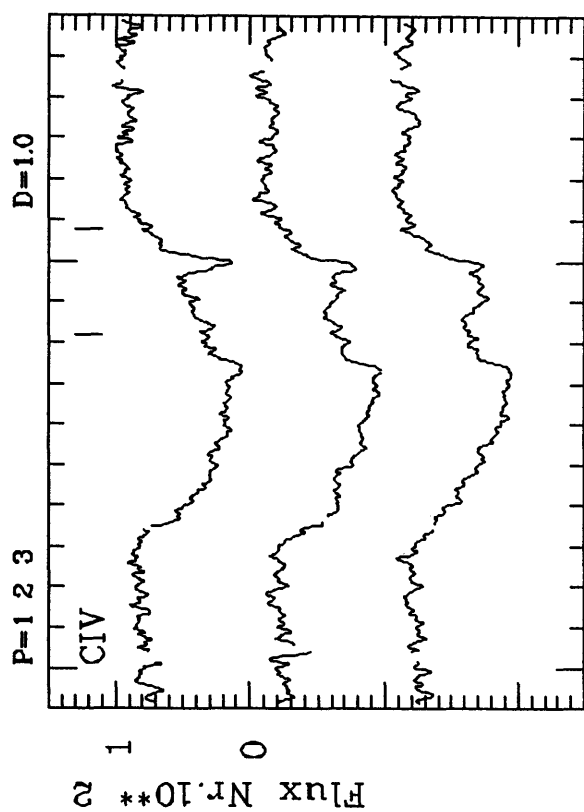
IUE 3 21909 L 83.12.30

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OHP R GA7848 87.11.27

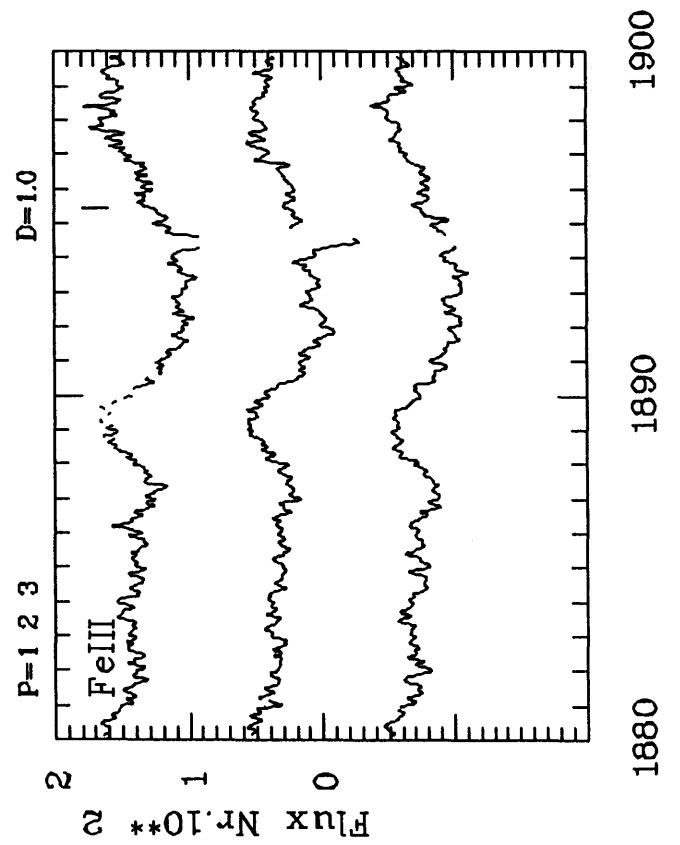
HD 48917 B2IIIe

vsini 200



HD 48917 B2IIIe

vsini 200

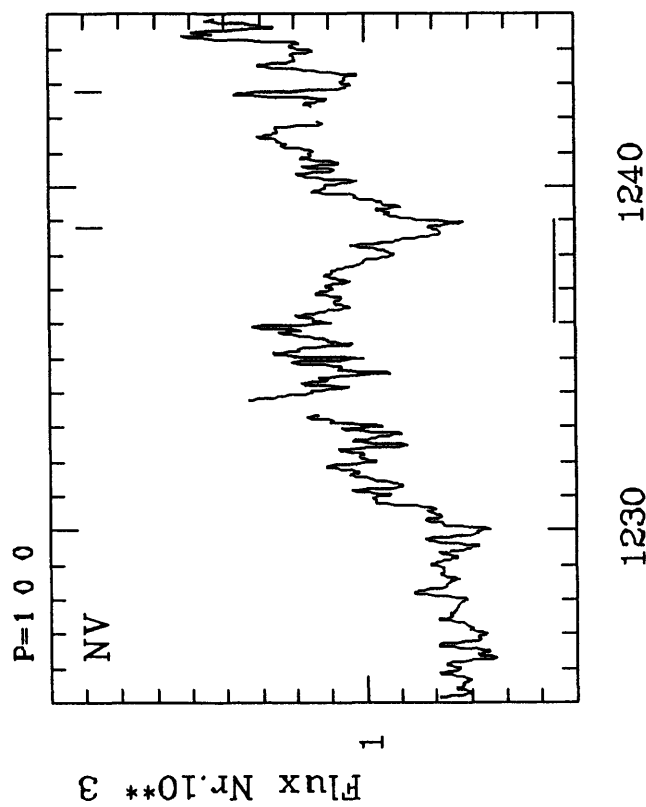
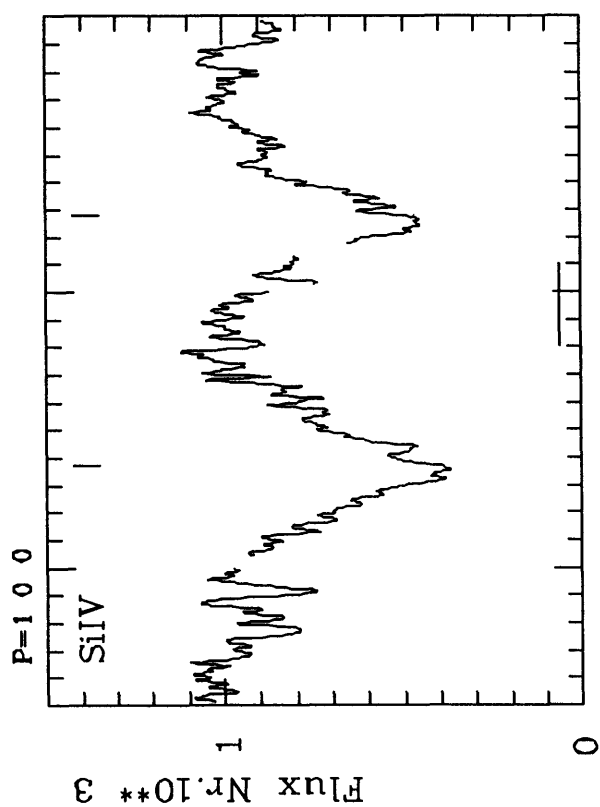
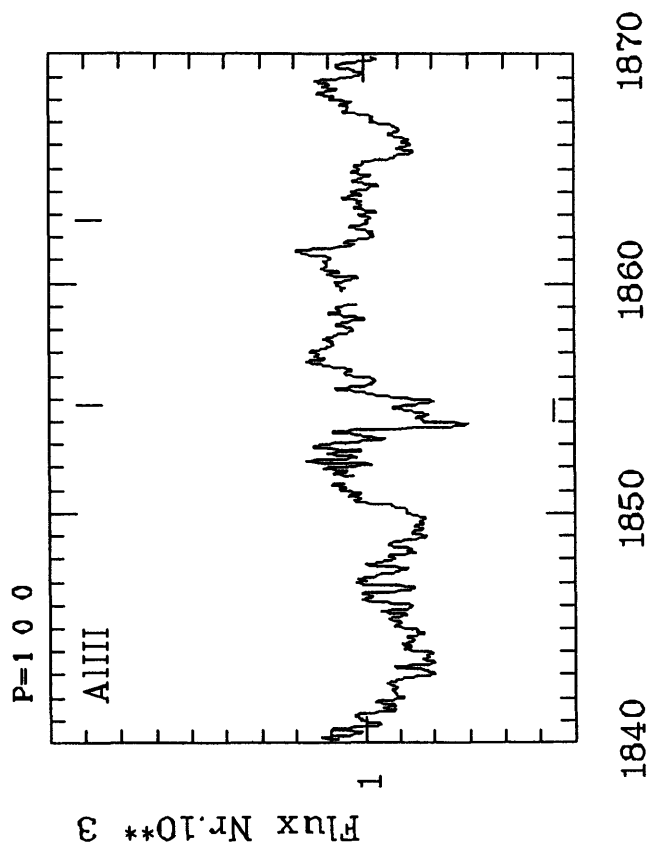
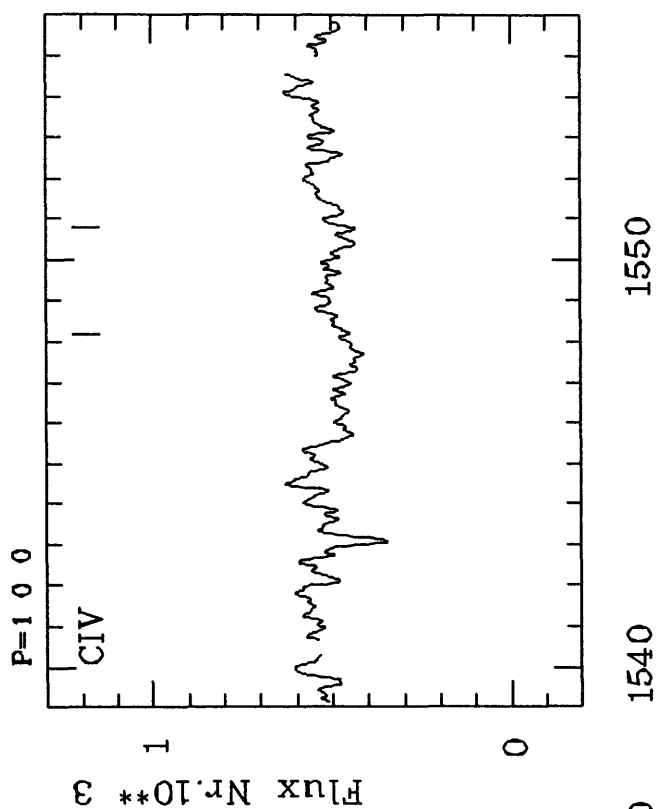


IUE 3 28108 L 86.04.05 - 3 29371 L 86.10.05 - 3 30909 L 87.05.04

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-
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HD 50013 B2IVe

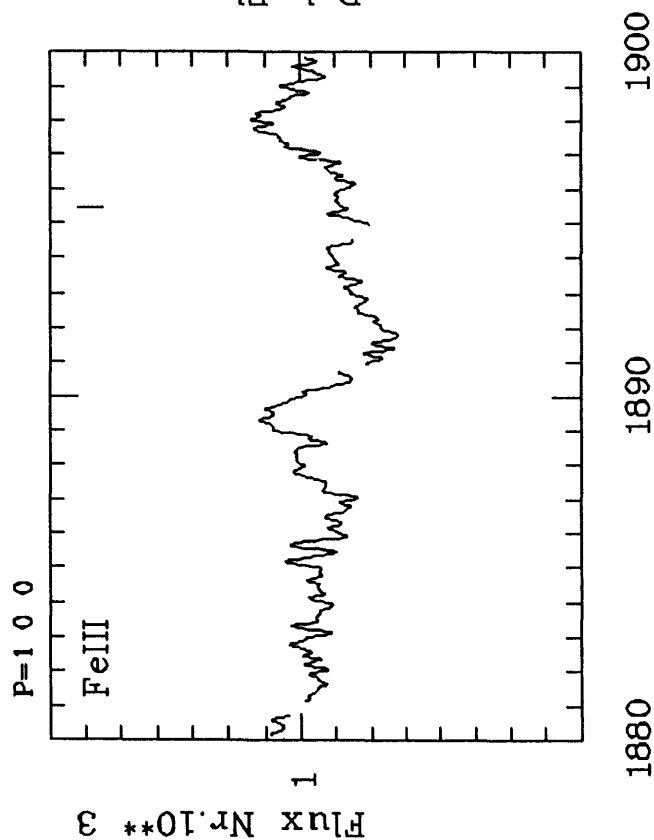
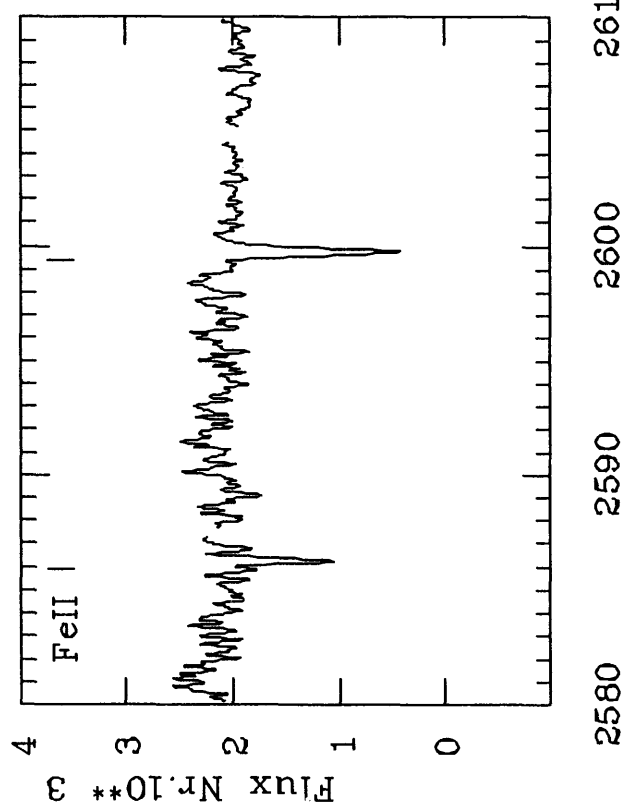
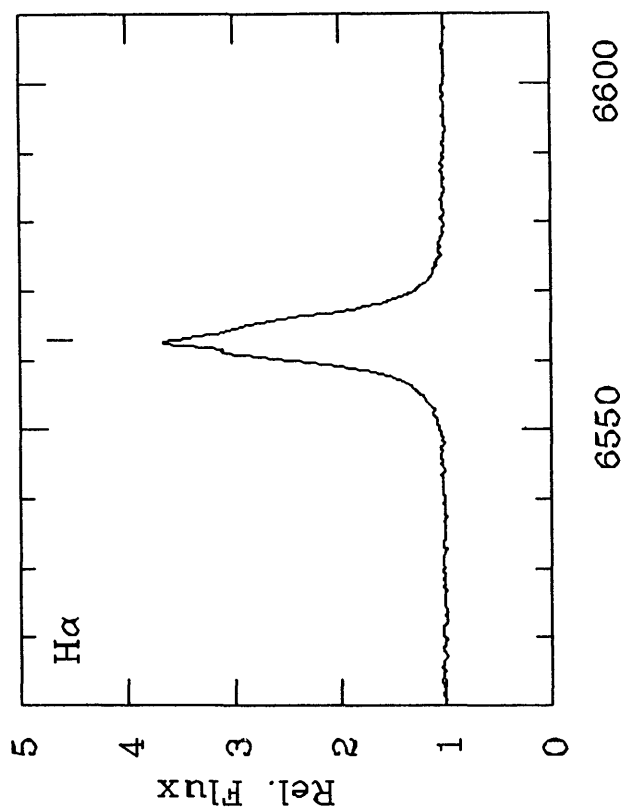
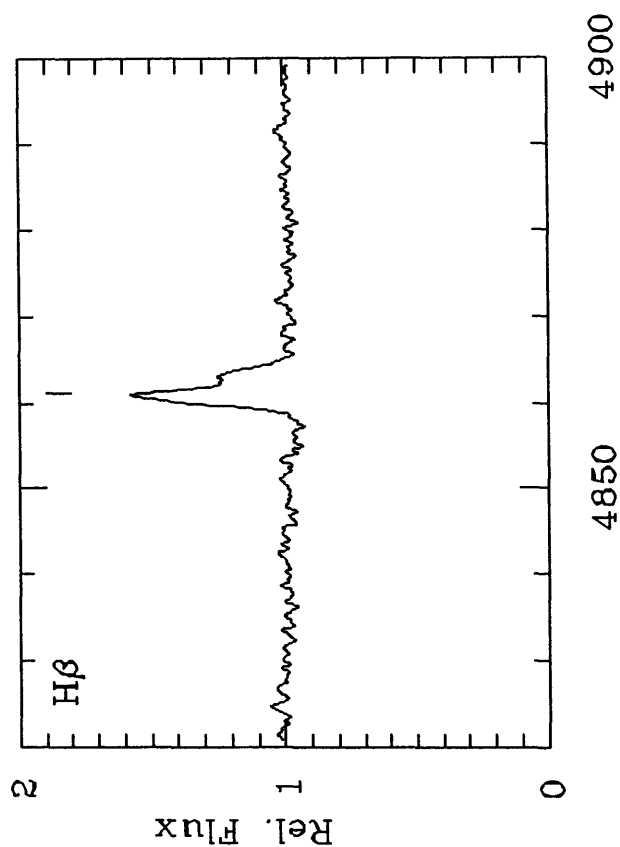
vsini 220



IUE 3 07747 L 80.01.23
 IUE 2 06739 L 80.01.23
 ESO B G13857 88.10.26
 ESO R G13868 88.10.27

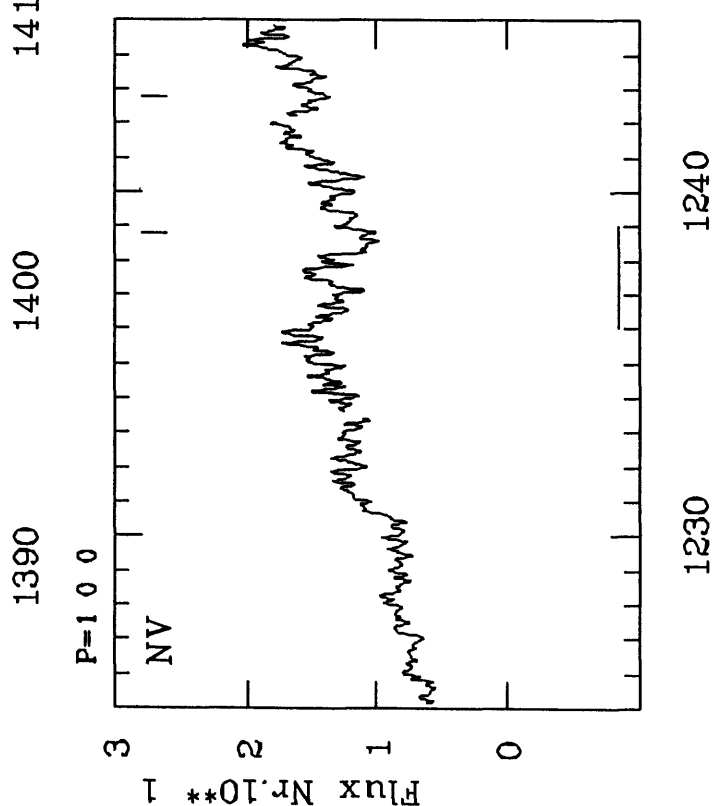
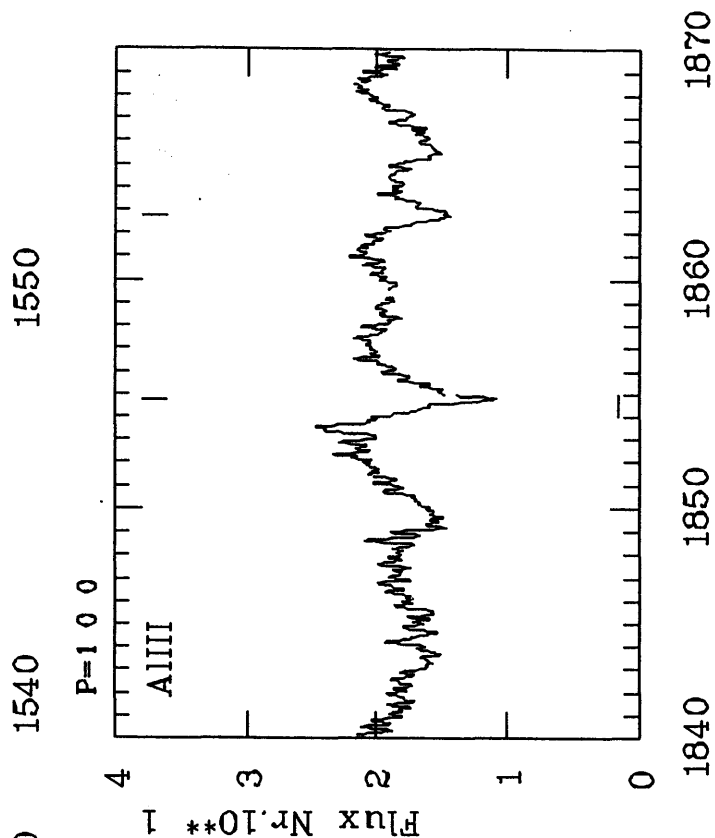
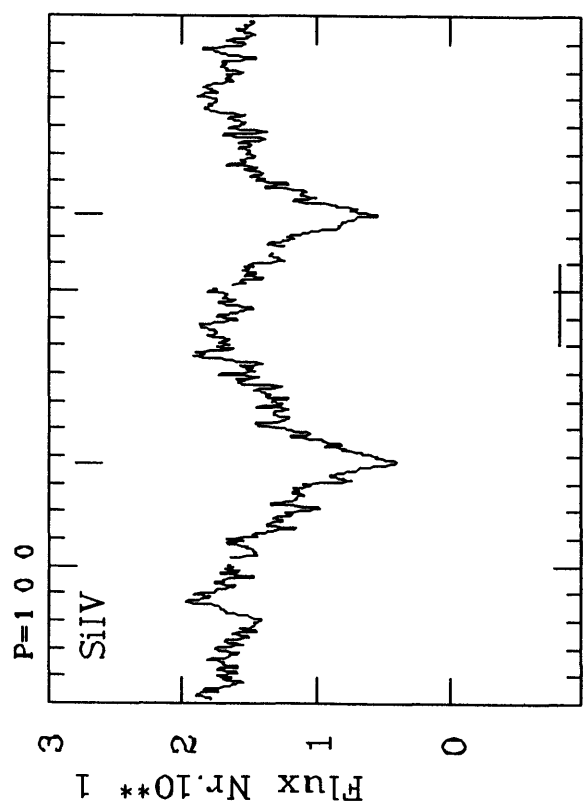
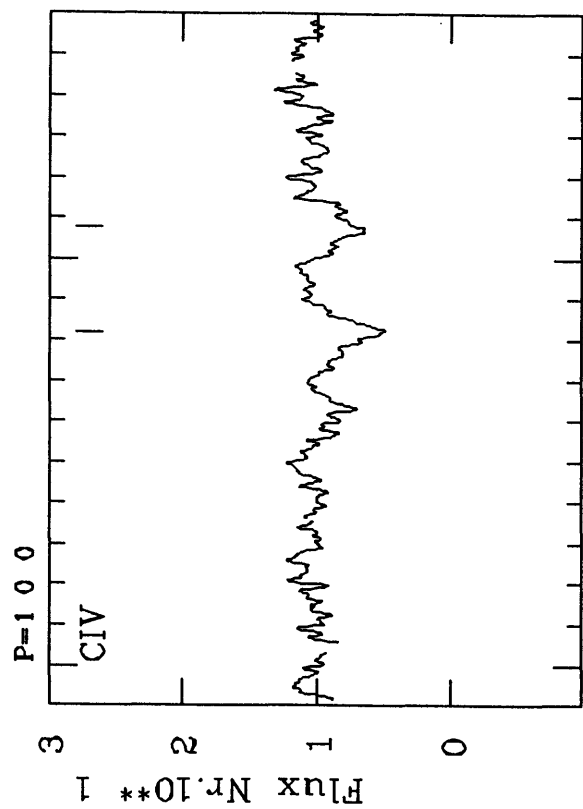
HD 50013 B2IVe

vsini 220



IUE 3 07747 L 80.01.23
 IUE 2 06739 L 80.01.23
 ESO B G13857 88.10.26
 ESO R G13868 88.10.27

HD 50083 B2Ve

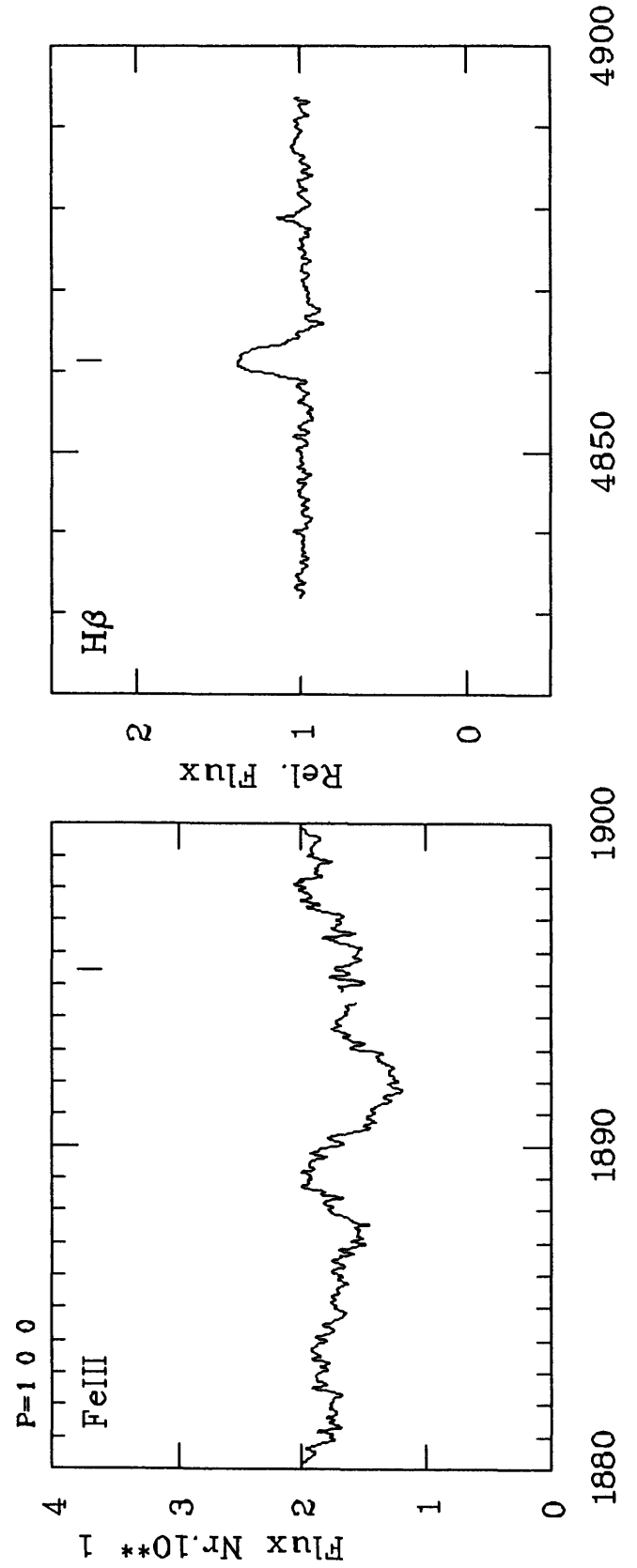


IUE 3 15958 L 82.01.05

OHP B W6496

77.11.23

HD 50083 B2Ve



IUE 3 15958 L 82.01.05

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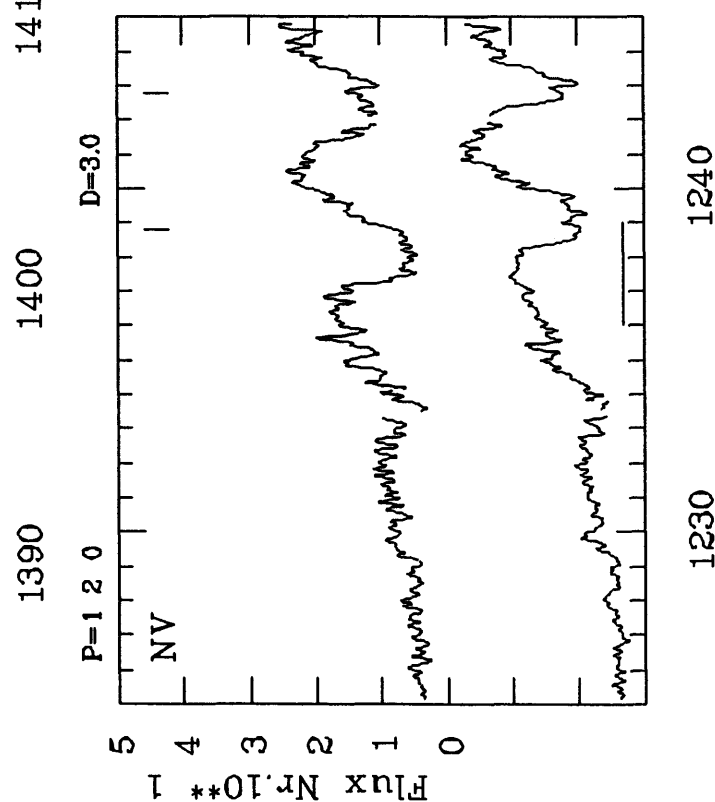
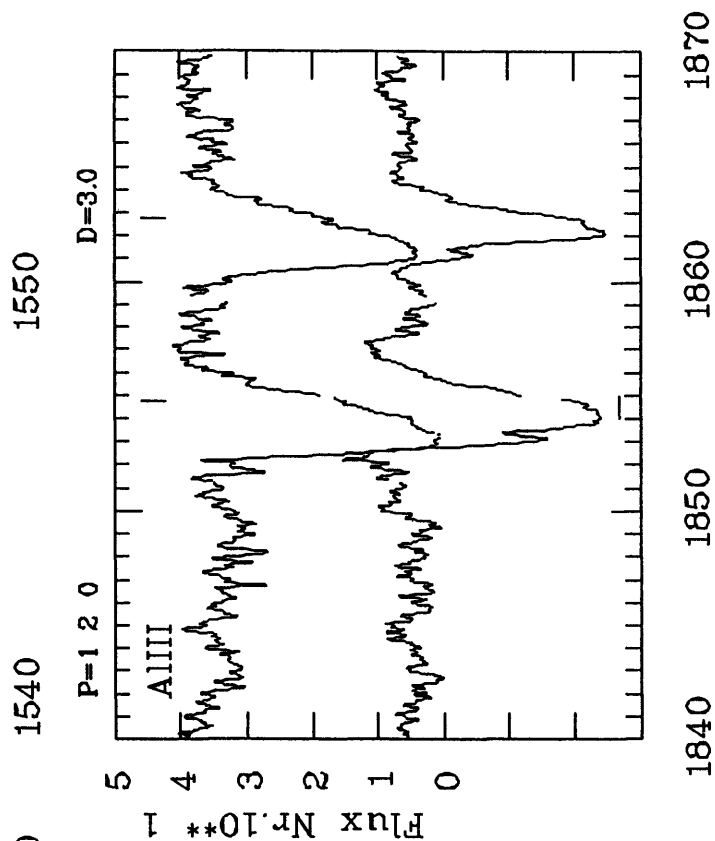
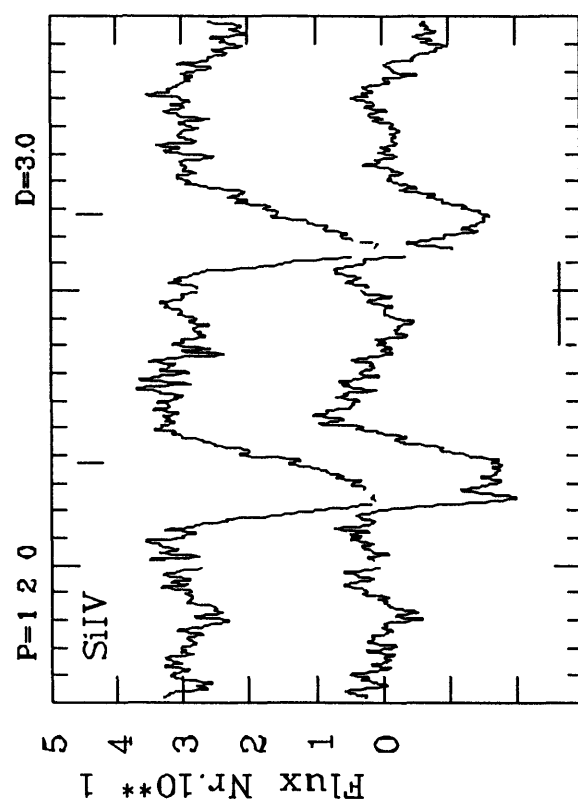
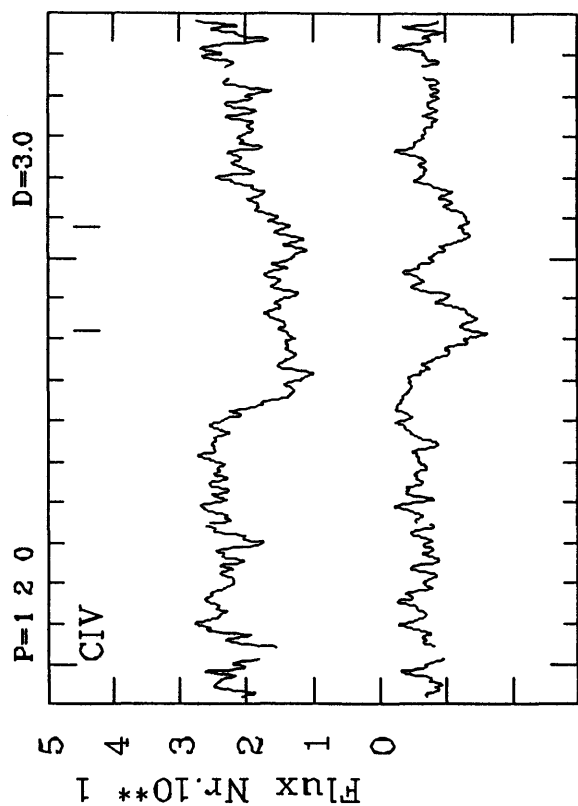
OHP B W6496

77.11.23

-

HD 50123 B6IVe+A

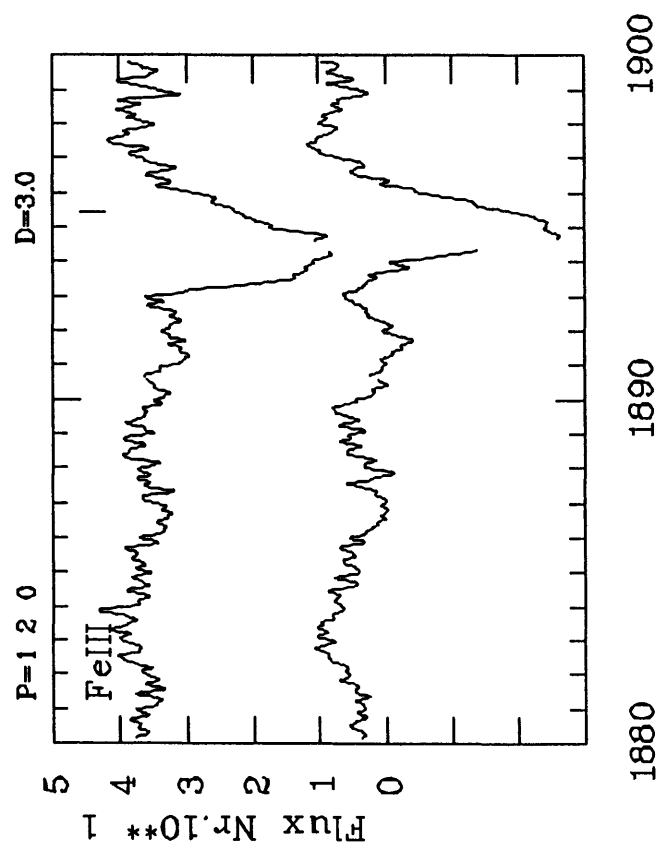
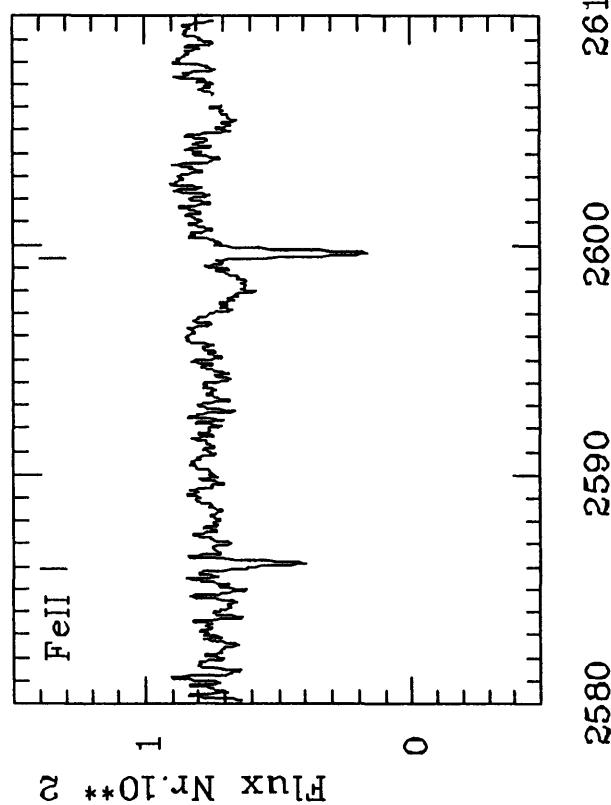
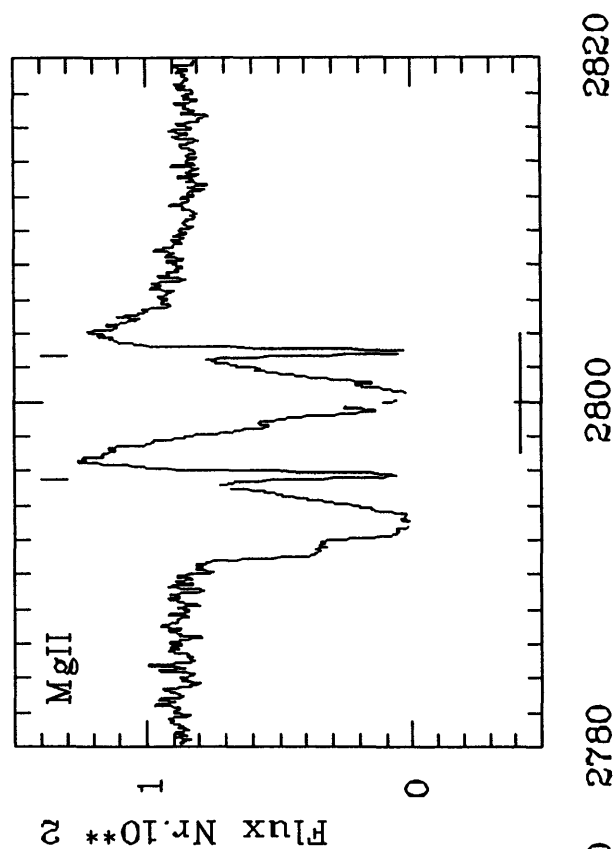
vsini 220+100



IUE 3 28109 L 86.04.06 - 3 30726 L 87.04.06
 IUE 1 10029 L 87.01.27

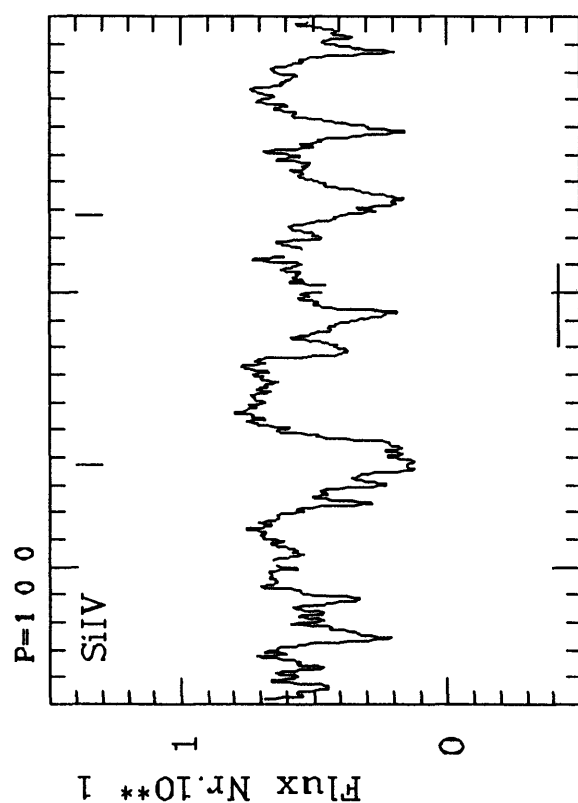
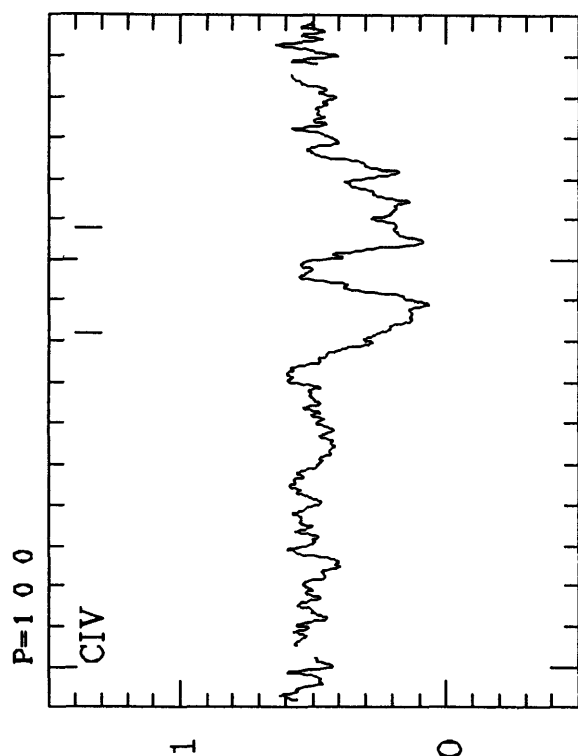
HD 50123 B6IVe+A

vsini 220+100

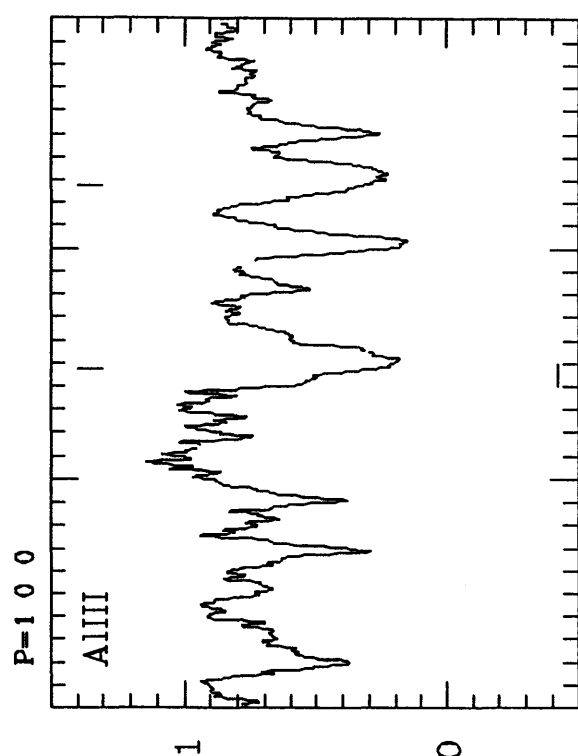


IUE 3 28109 L 86.04.06 - 3 30726 L 87.04.06
 IUE 1 10029 L 87.01.27

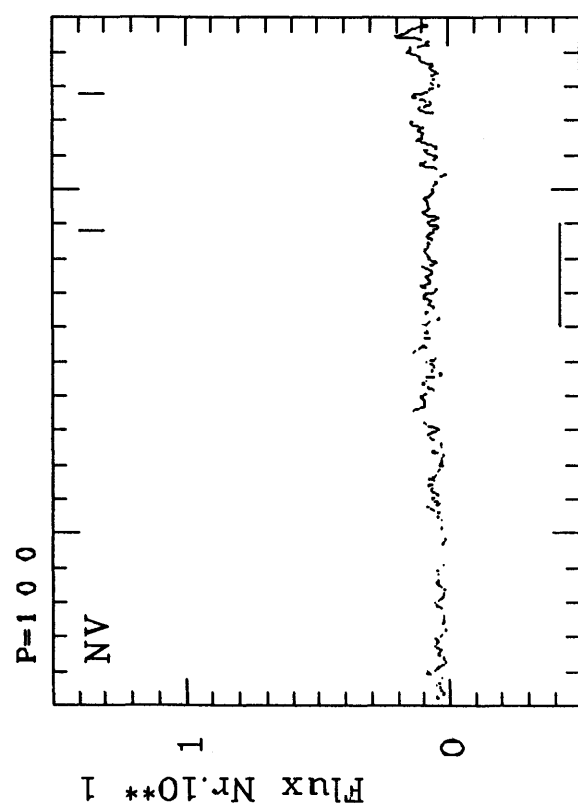
HD 50138 B9Ve



1540 1550



1410 1400

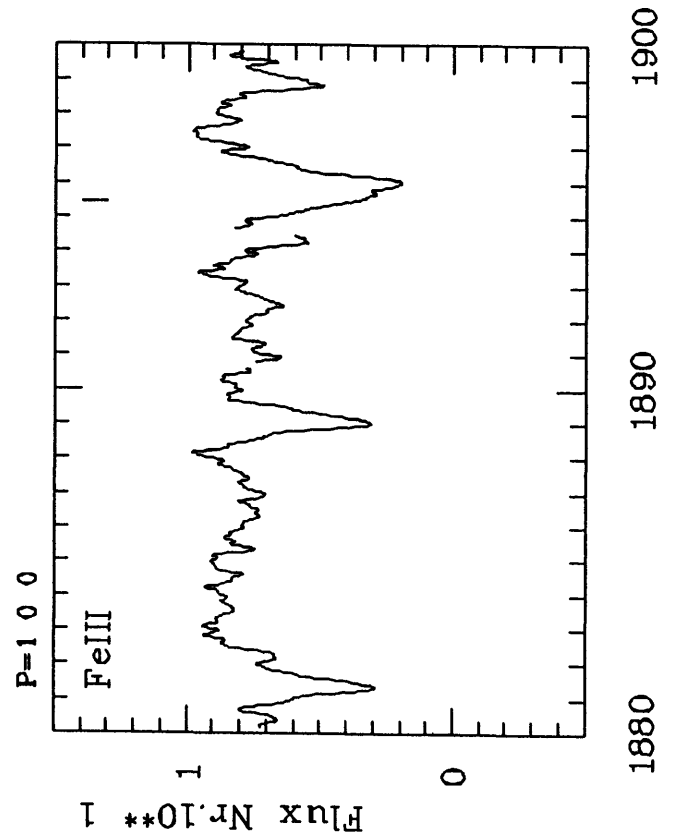
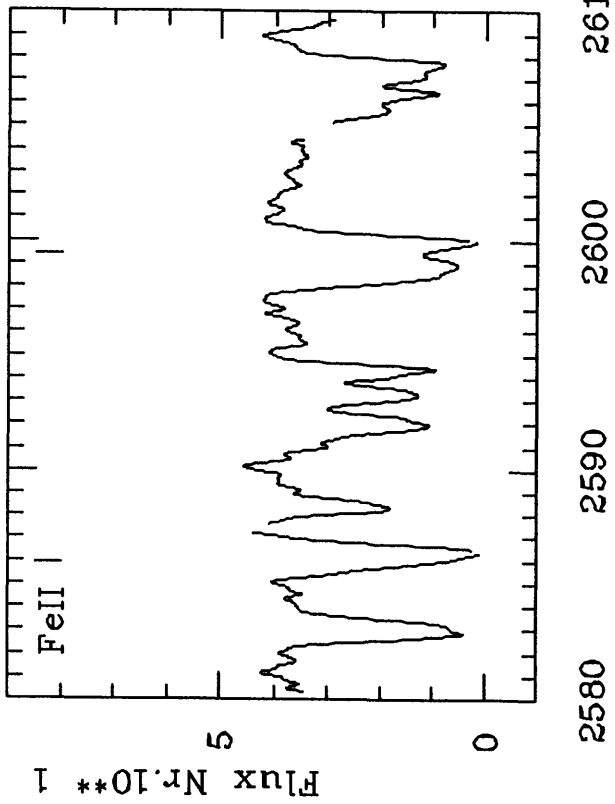
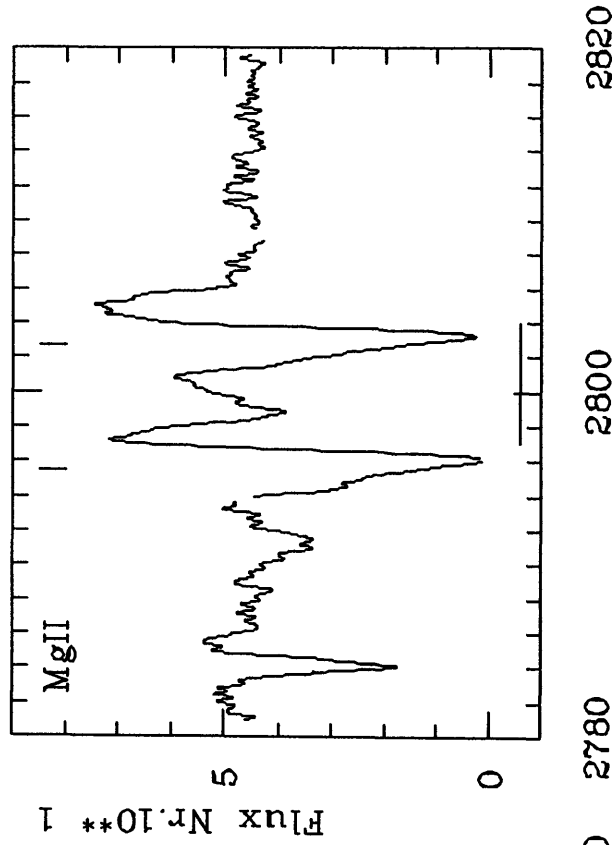


1840 1850 1860 1870

1230 1240

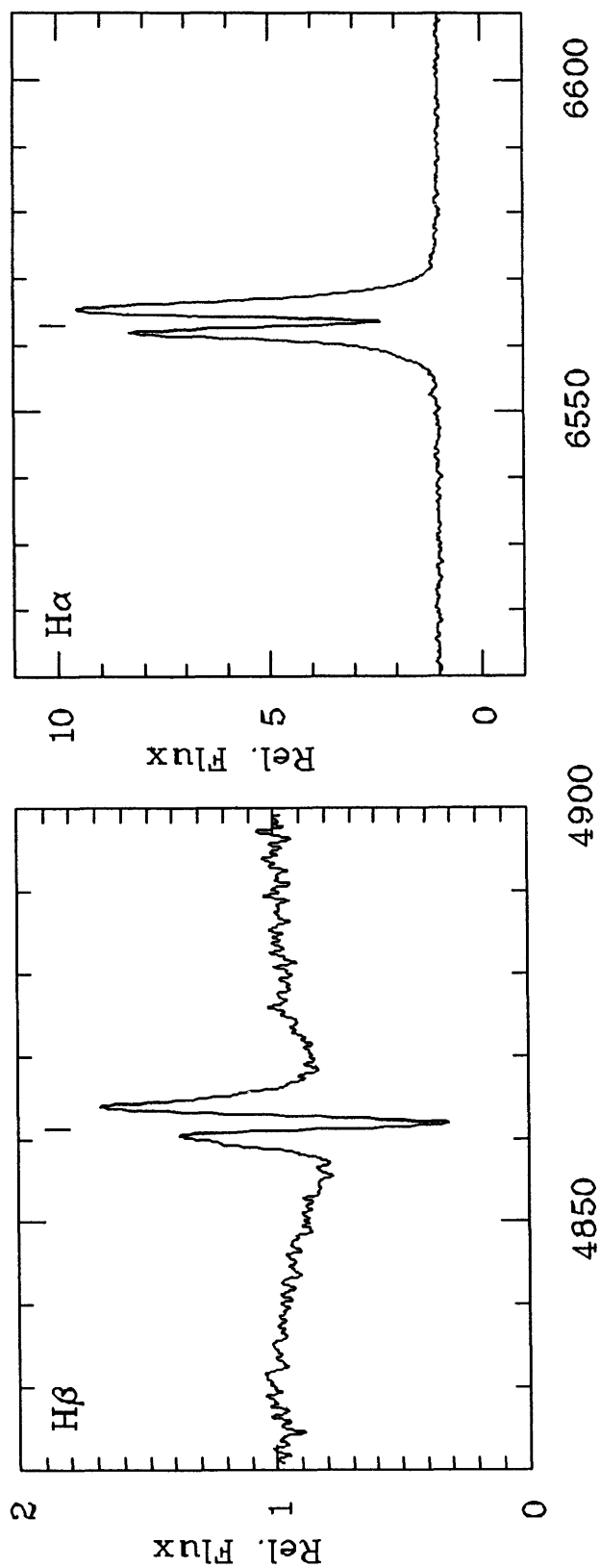
IUE 3 16017 L 82.01.11
 IUE 2 03967 L 79.03.09
 OHP B GB7610 83.01.24
 OHP R GA5698 84.01.03

HD 50138 B9Ve



IUE 3 16017 L 82.01.11
 IUE 2 03967 L 79.03.09
 OHP B GB7610 83.01.24
 OHP R GA5698 84.01.03

HD 50138 B9Ve



IUE 3 16017 L 82.01.11

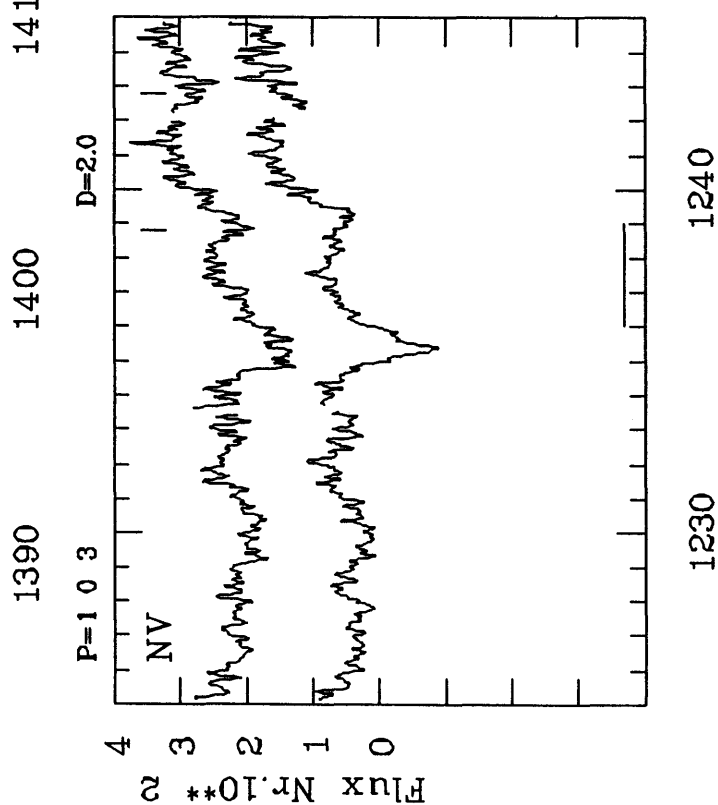
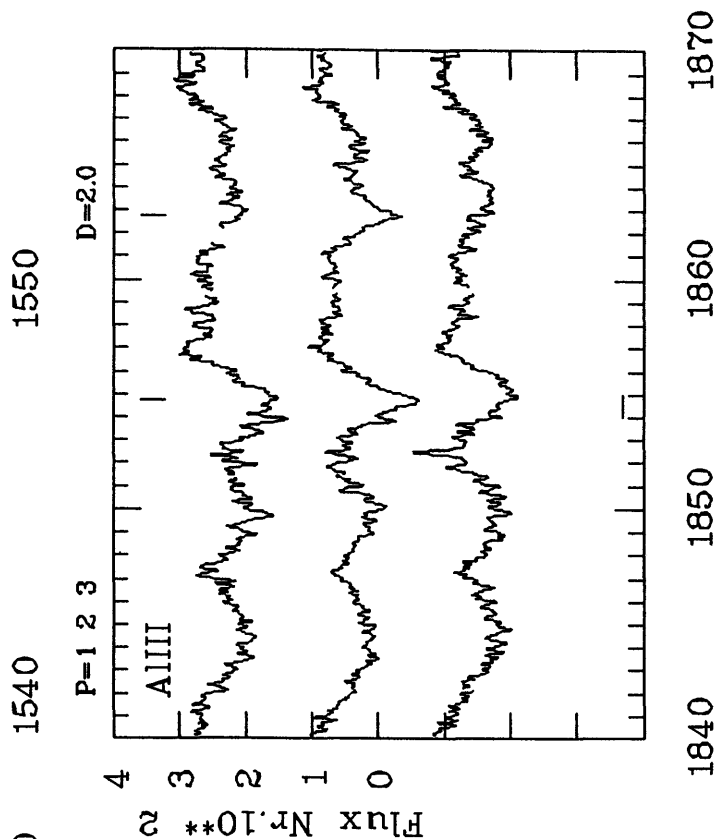
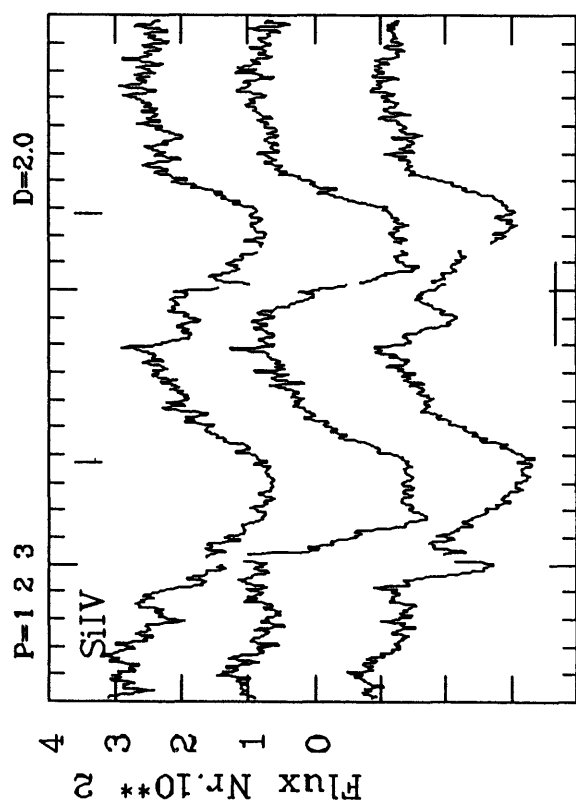
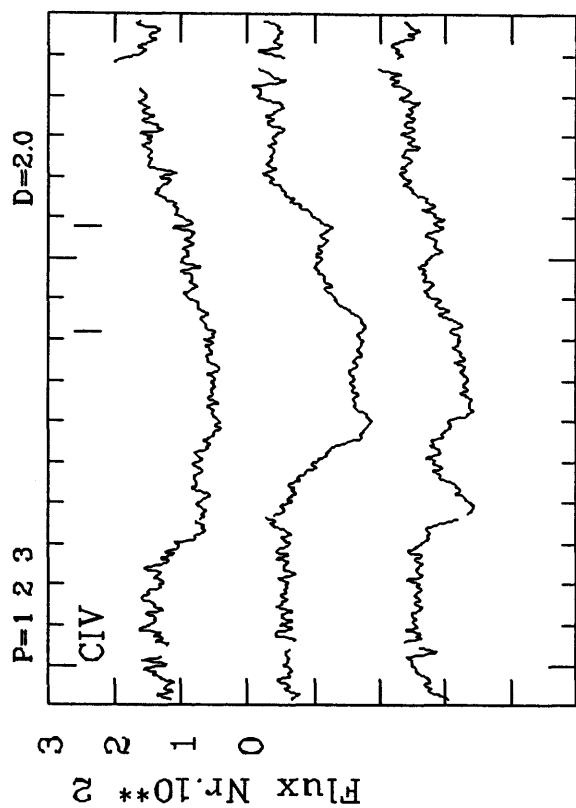
IUE 2 03967 L 79.03.09

OHP B GB7610 83.01.24

OHP R GA5698 84.01.03

HD 52918 B1.5IIIe

vsini 270

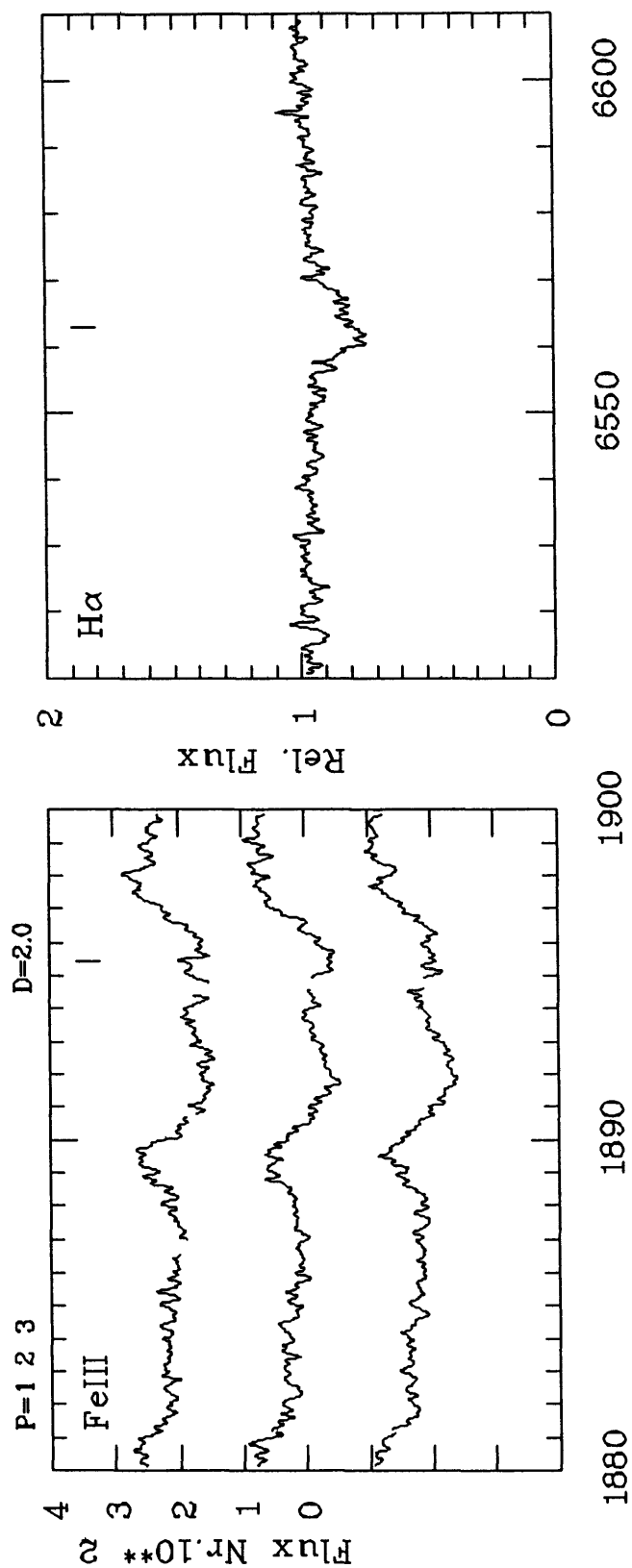


IUE 3 21913 L 83.12.30 - 3 29239 L 86.09.18 - 3 29348 L 86.10.02

OHP R GA7904 88.01.25

HD 52918 B1.5IIIe

vsini 270



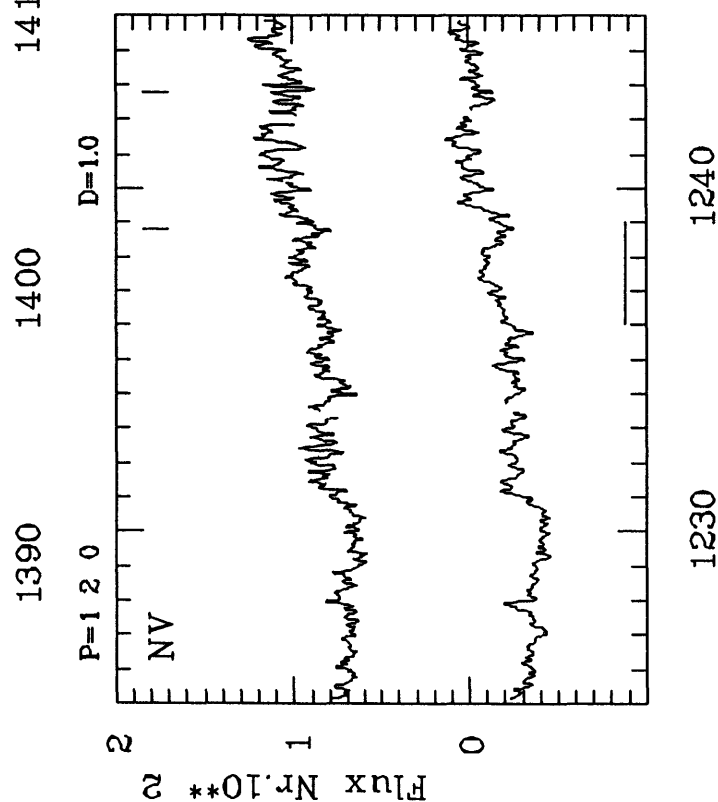
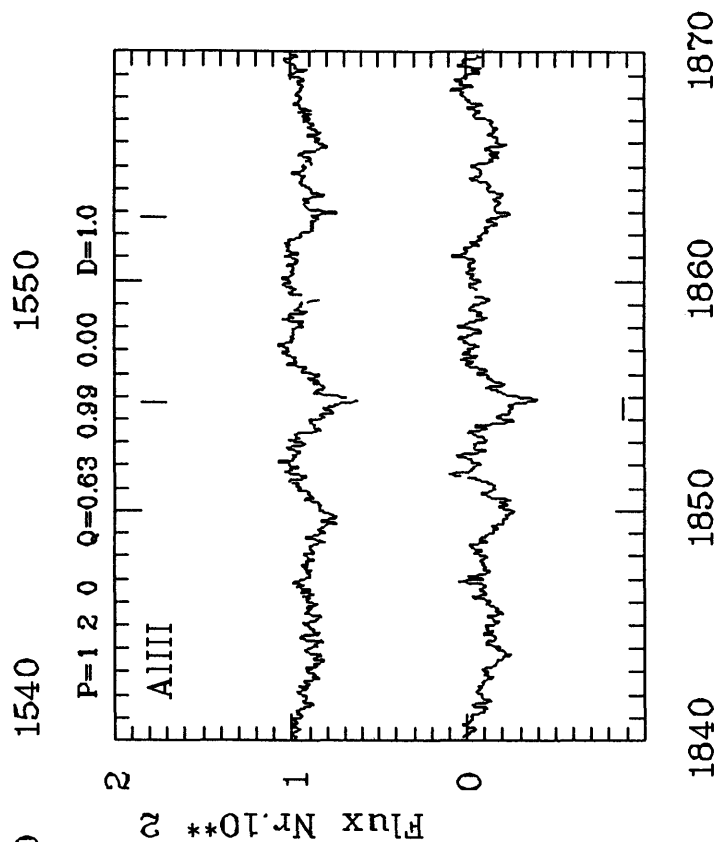
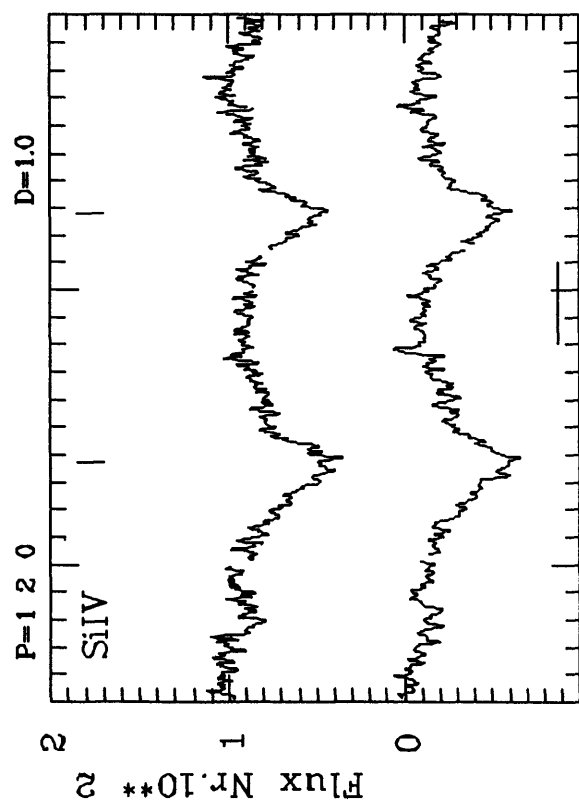
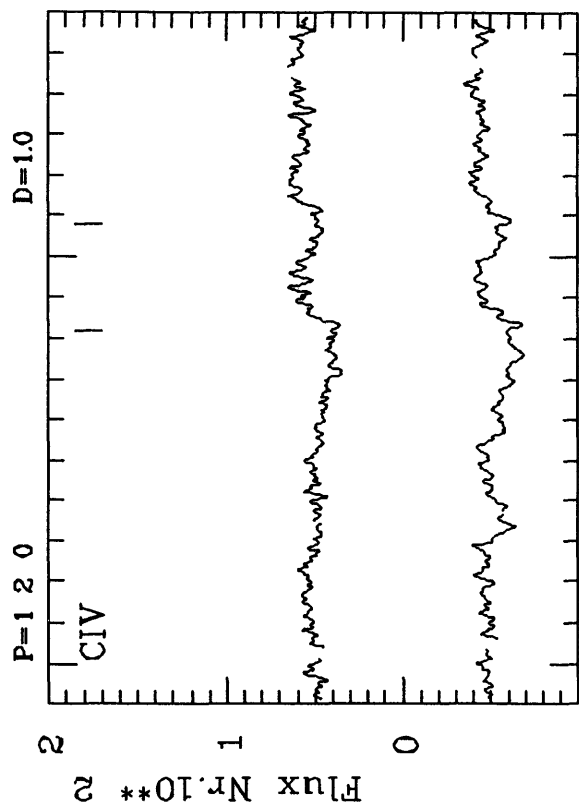
IUE 3 21913 L 83.12.30 - 3 29239 L 86.09.18 - 3 29348 L 86.10.02

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OHP R GA7904 88.01.25

HD 54309 B2IVe

vsini 200



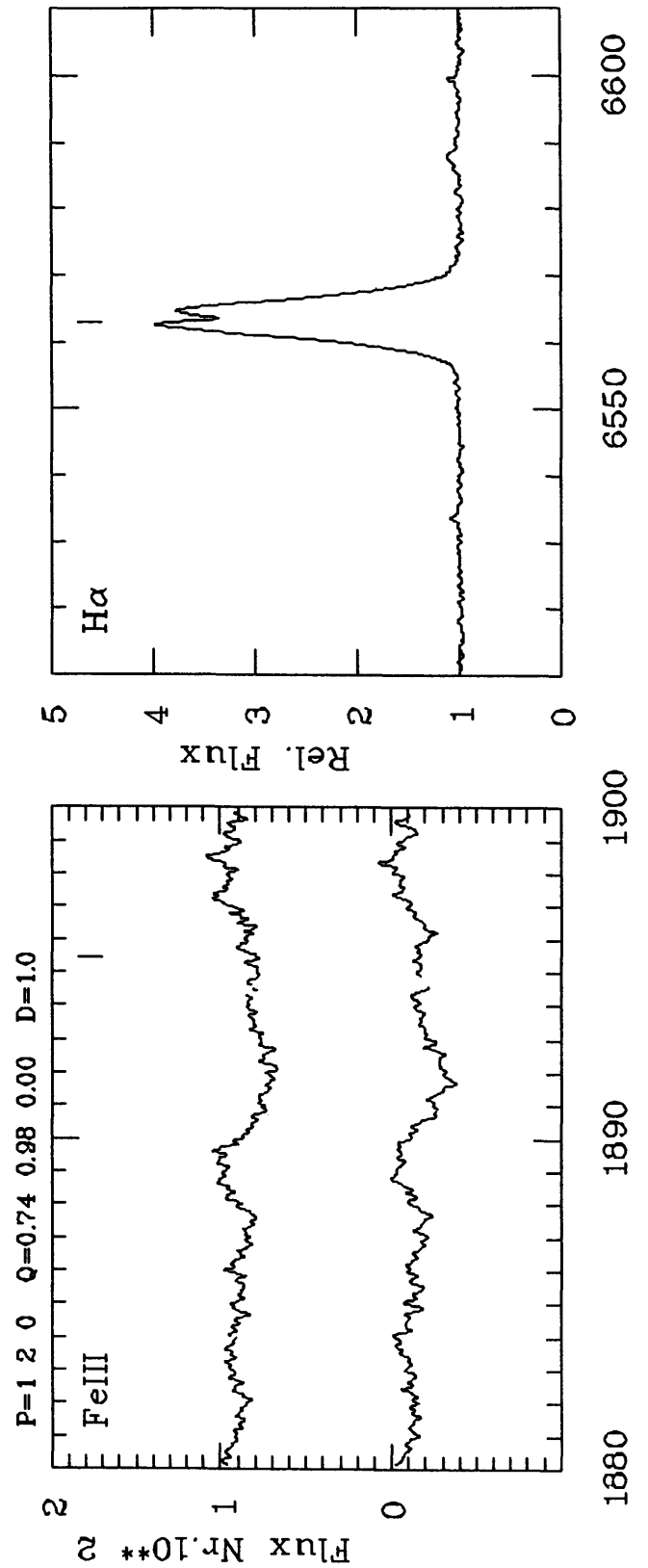
IUE 3 28107 L 86.04.05 - 3 29373 L 86.10.05

ESO R G13814 88.10.23

HD 54309

B2IVe

vsini 200



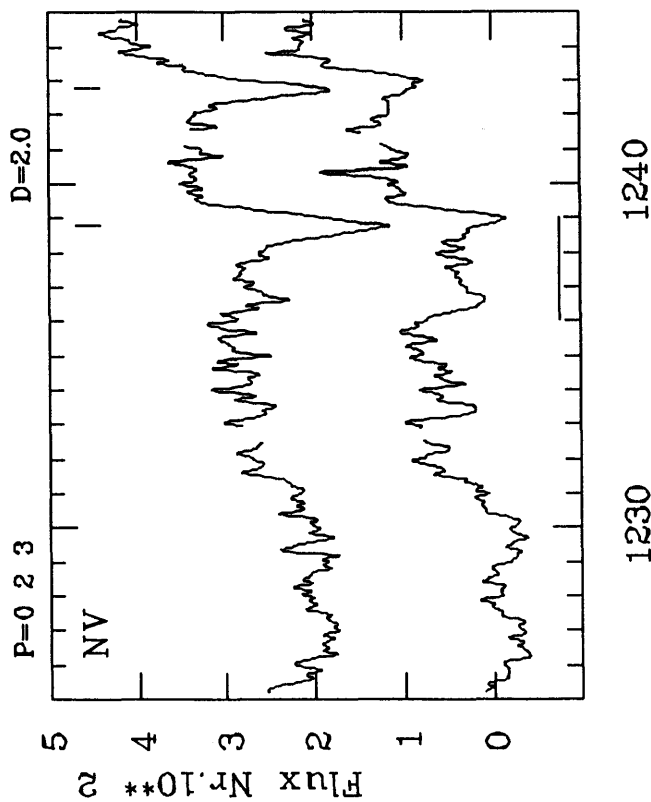
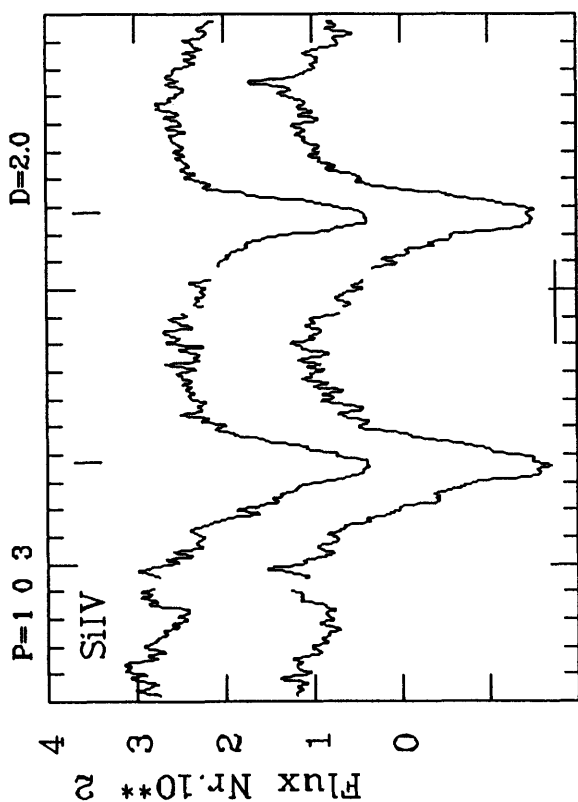
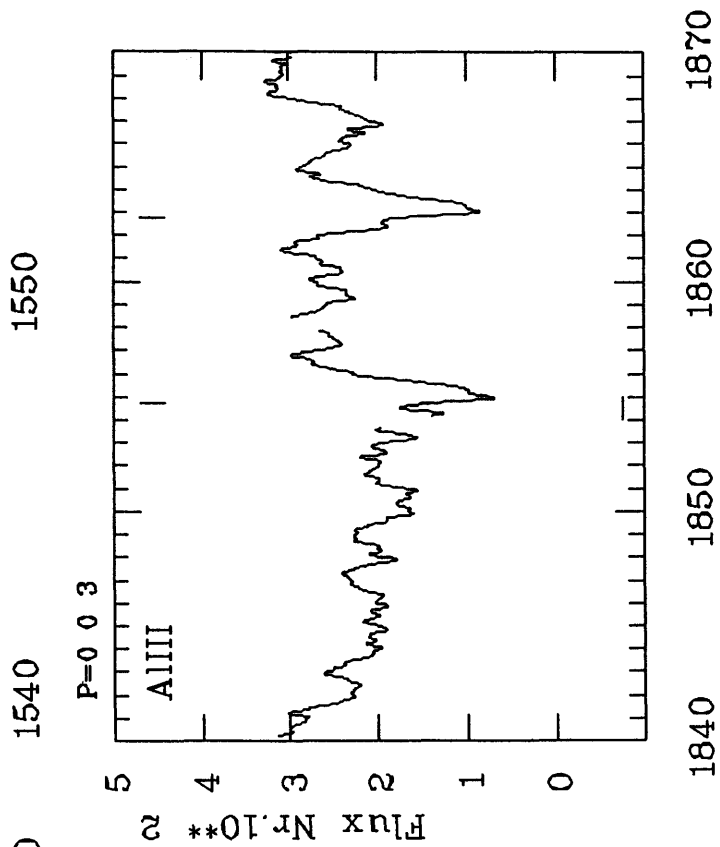
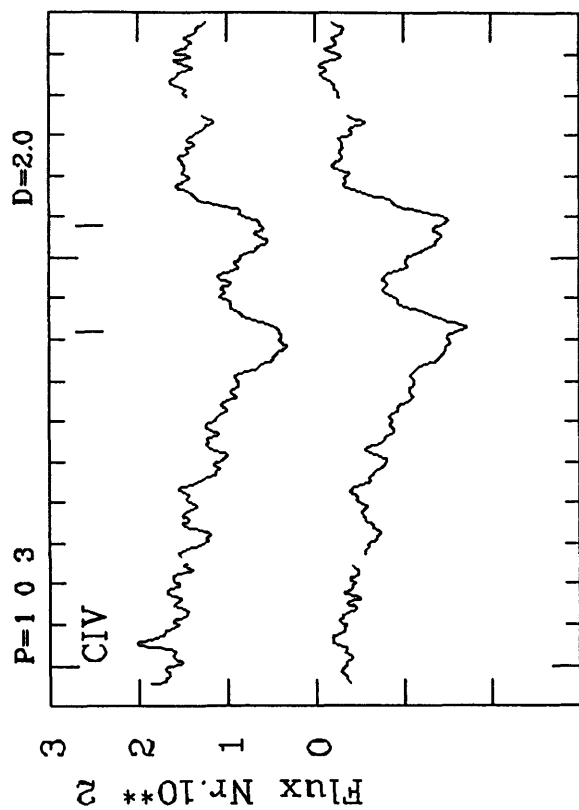
IUE 3 28107 L 86.04.05 - 3 29373 L 86.10.05

ESO R G13814

88.10.23

HD 56014 B3IIIepsh

vsini 150:

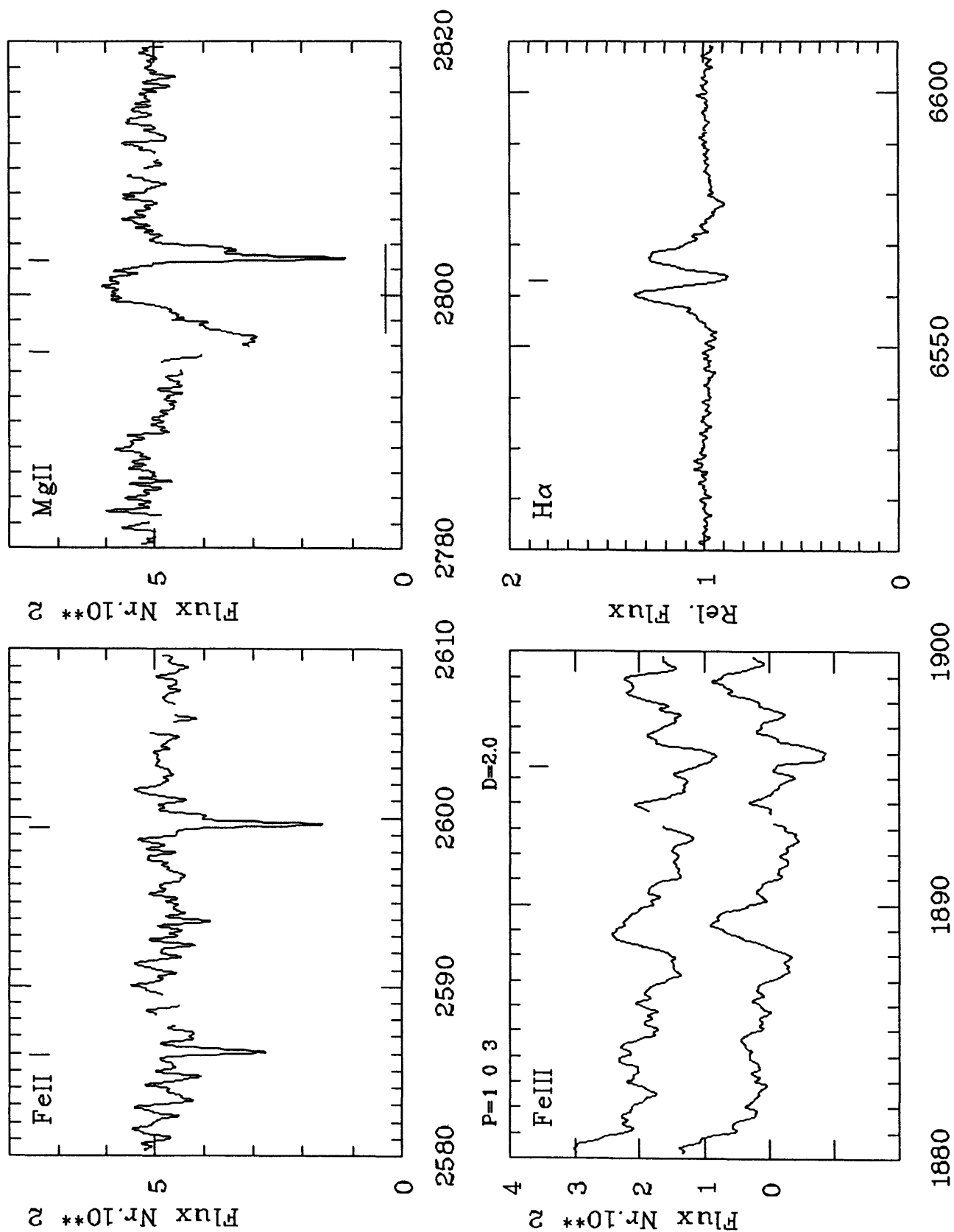


IVE 3 02866 S 78.10.06 - 3 03392 S 78.11.19 - 3 03824 S 79.01.06
 IVE 2 03402 S 79.01.06

ESO R G13839 88.10.25

HD 56014 B3IIIepsh

vsini 150:

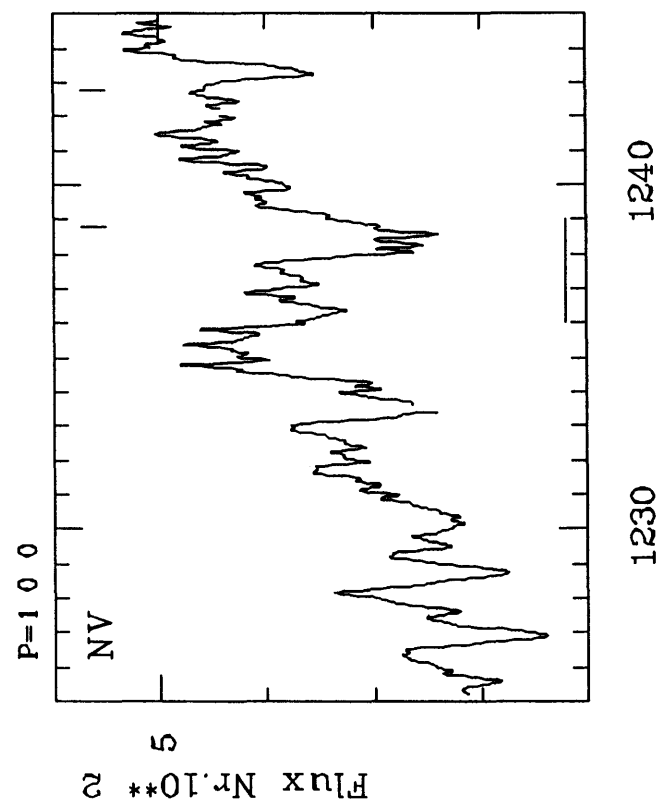
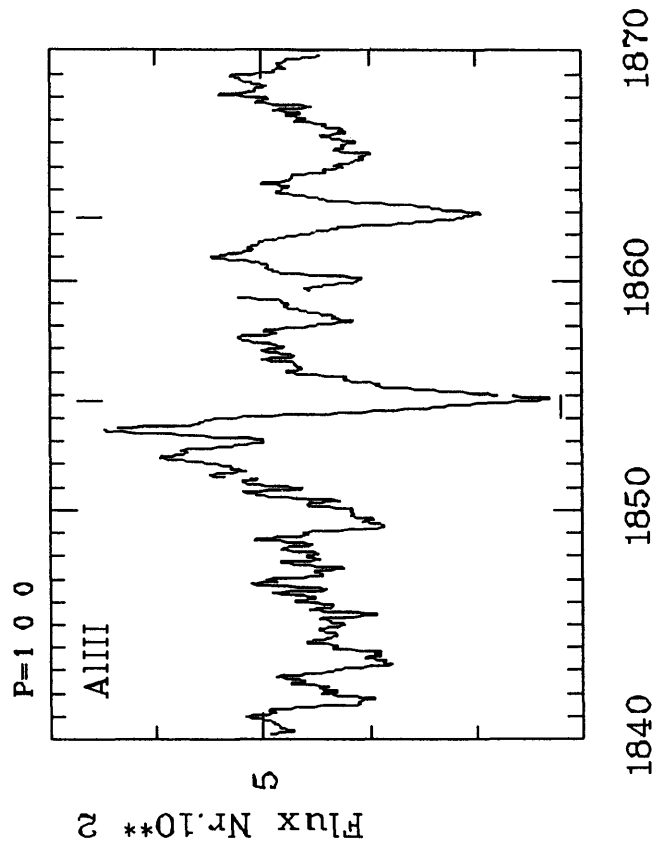
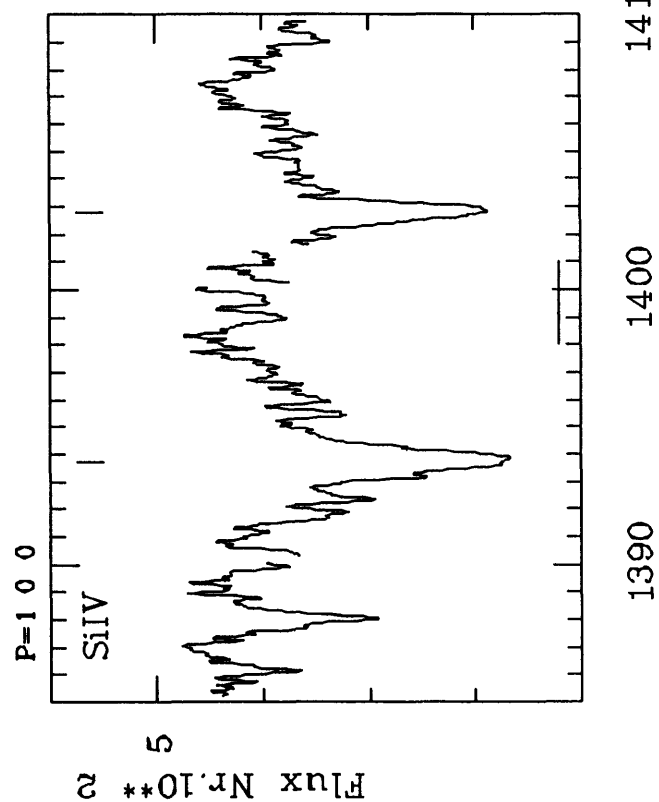
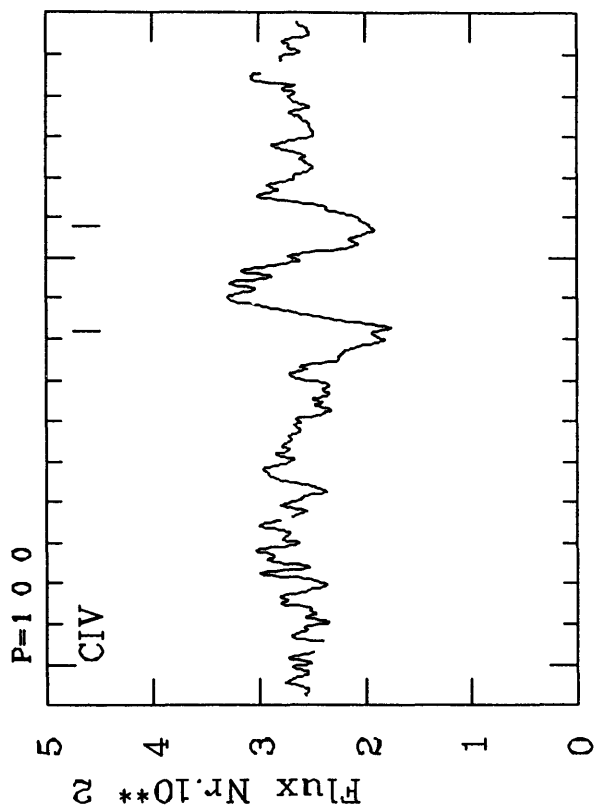


IUE 3 02866 S 78.10.06 - 3 03392 S 78.11.19 - 3 03824 S 79.01.06
 IUE 2 03402 S 79.01.06

ESO R G13839 88.10.25

HD 56139 B2.5Ve

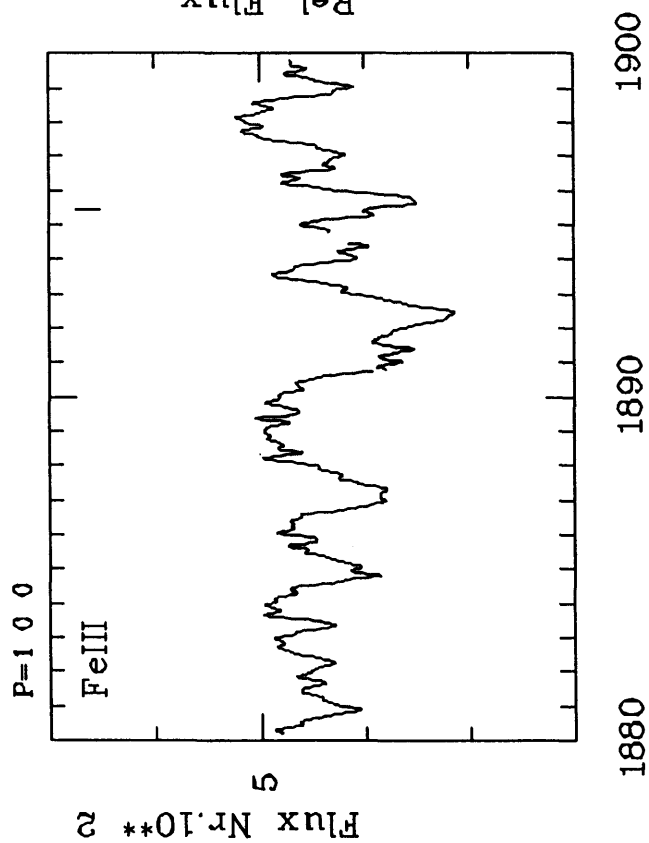
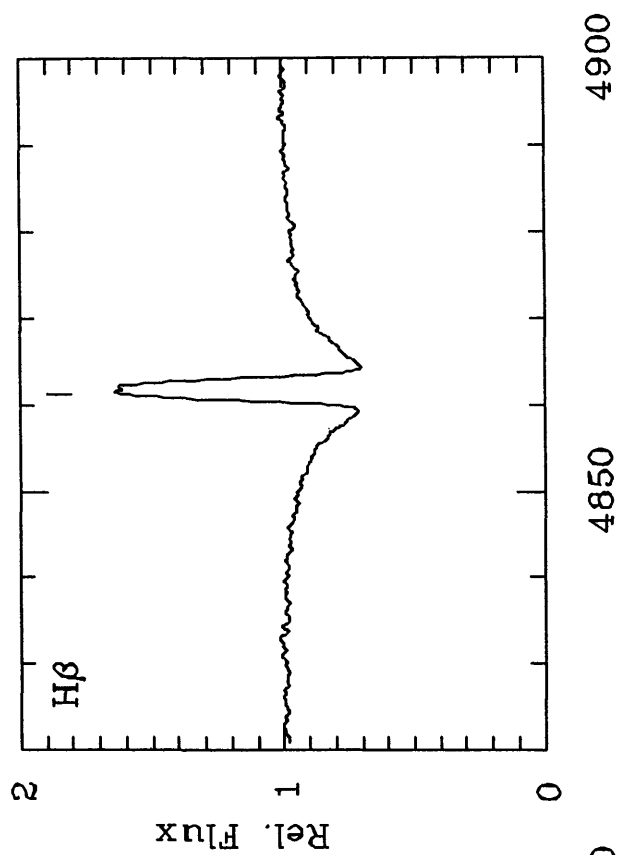
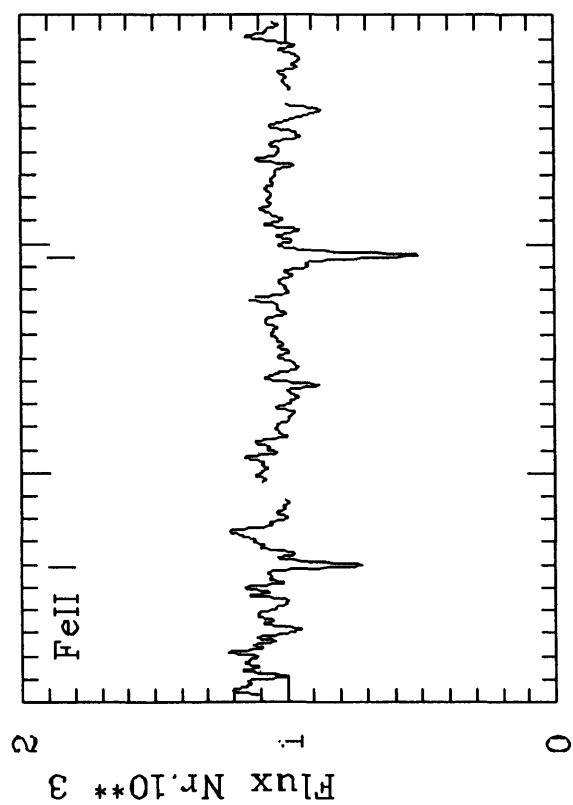
vsini 80



IUE 3 15980 L 82.01.06
 IUE 2 02989 S 78.11.21
 ESO B G13837 88.10.25

HD 56139 B2.5Ve

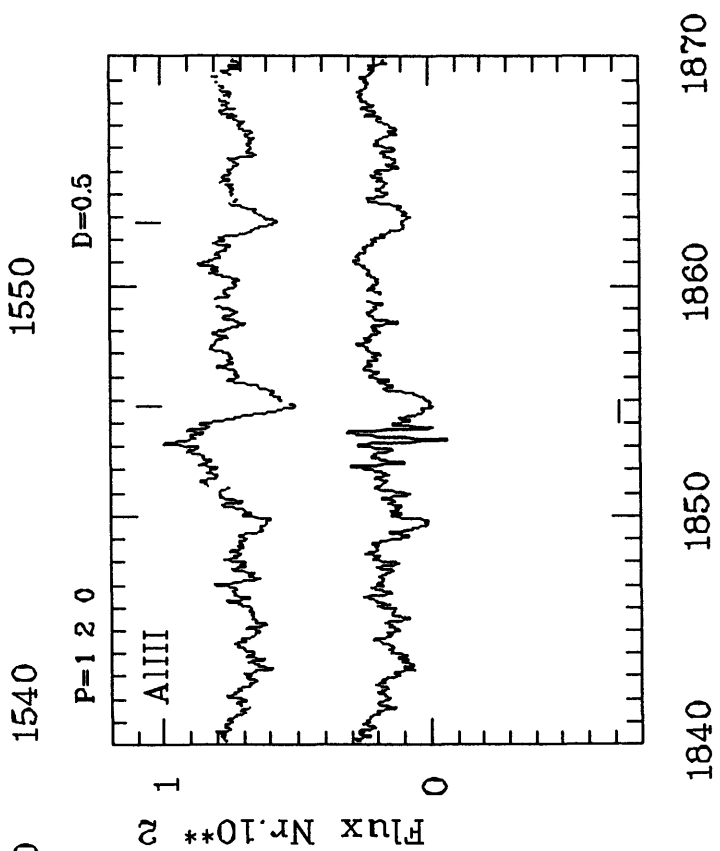
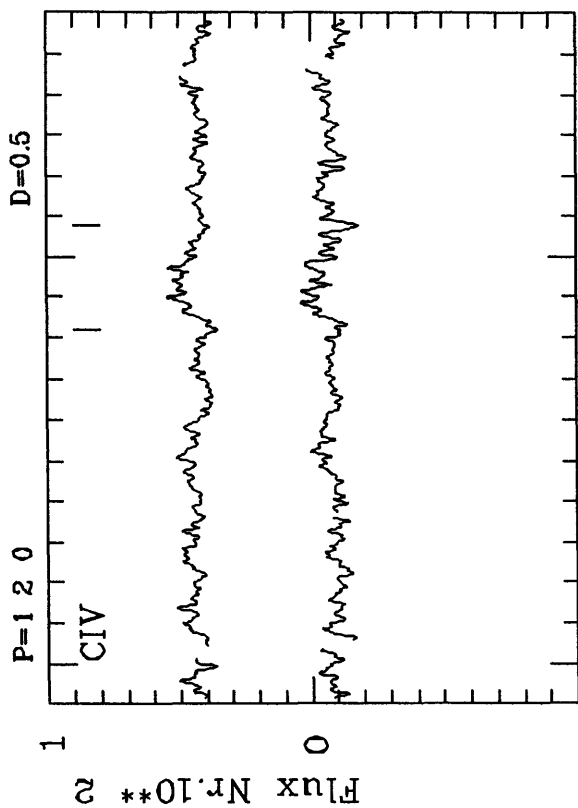
vsini 80



IVE 3 15980 L 82.01.06
 IVE 2 02989 S 78.11.21
 ESO B G13837 88.10.25

HD 58050 B2Ve

vsini 140

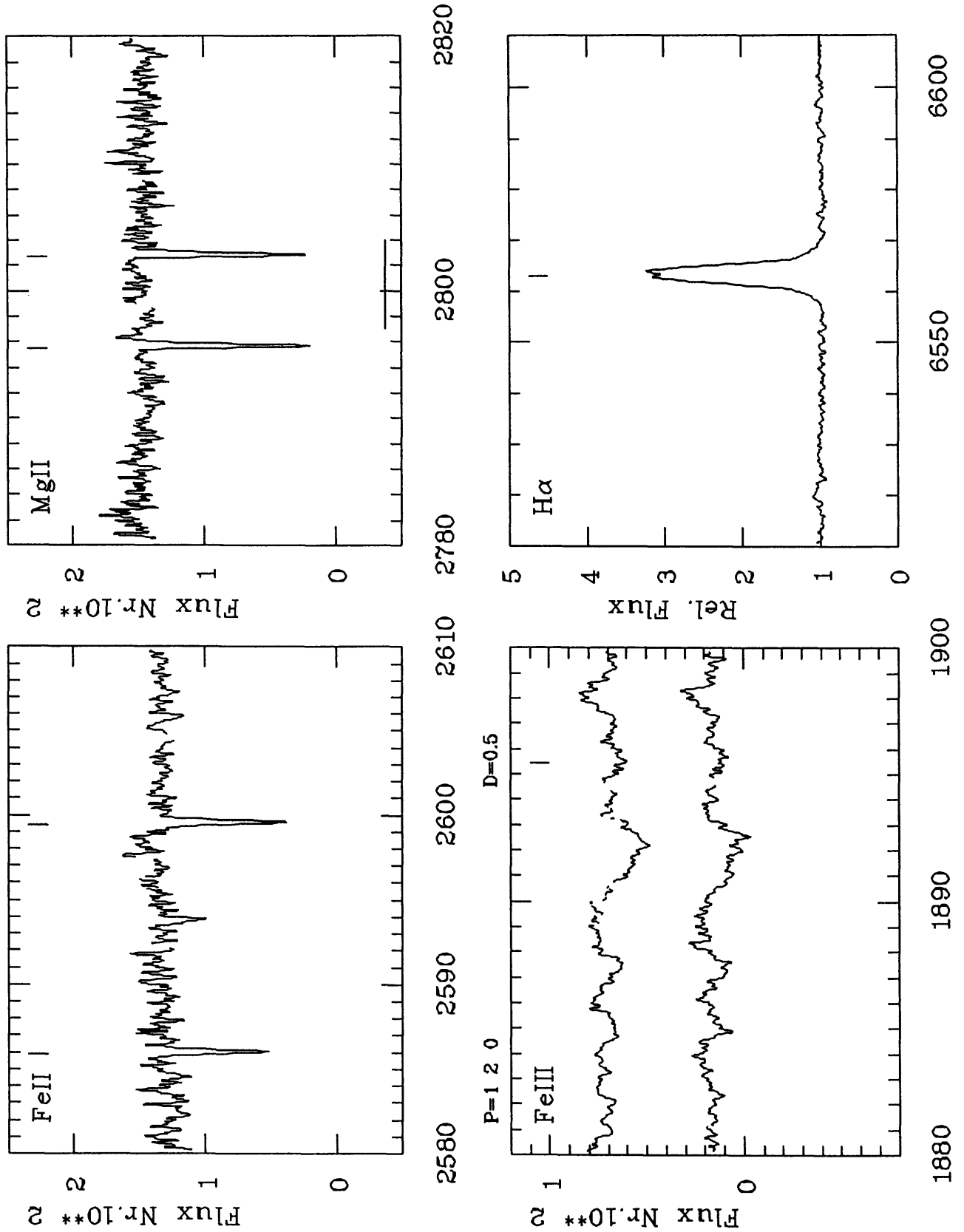


IUE 3 16536 L 82.03.14 - 3 18755 L 82.12.08
 IUE 2 14810 L 82.12.08

OHP R GA7064 86.02.06

HD 58050 B2Ve

vsini 140

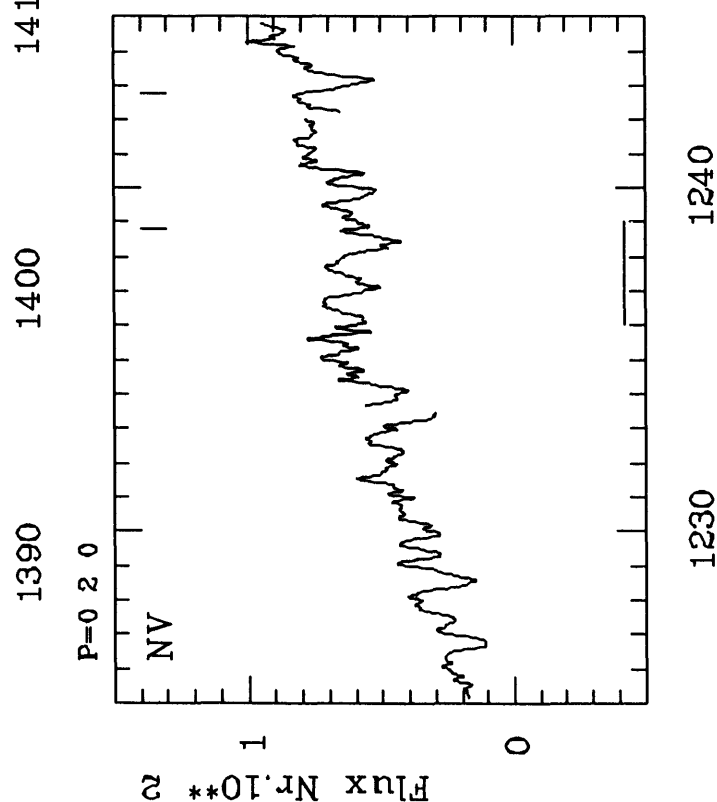
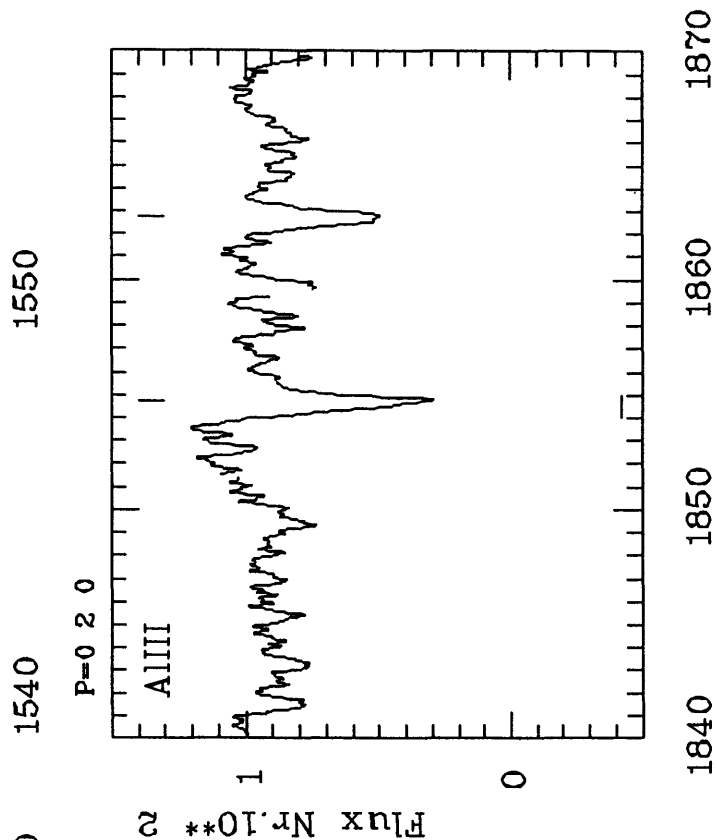
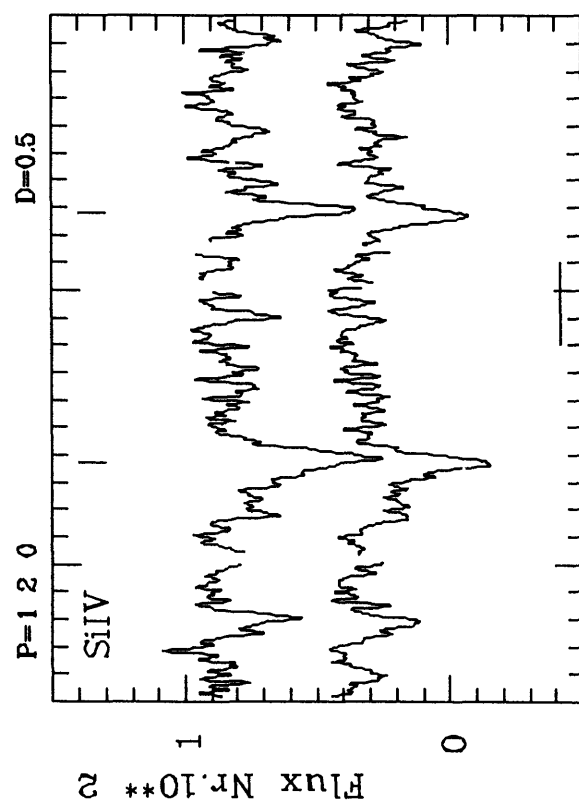
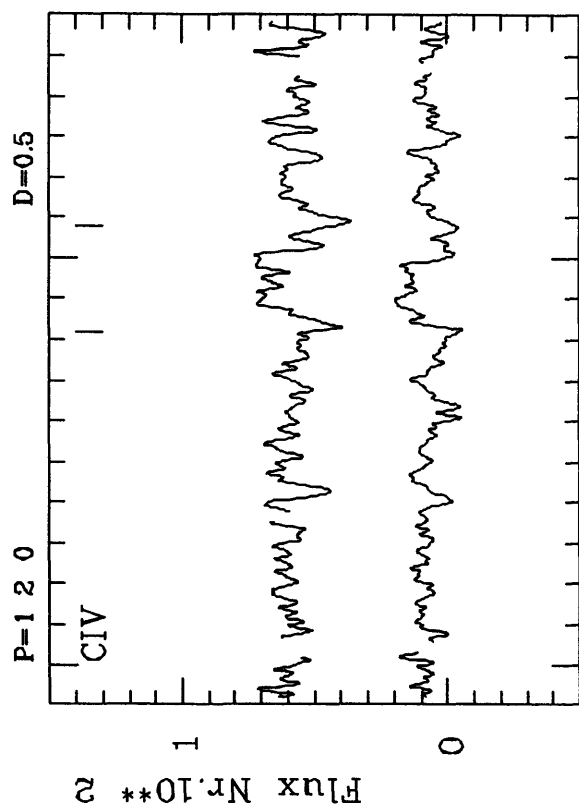


IUE 3 16536 L 82.03.14 - 3 18755 L 82.12.08
 IUE 2 14810 L 82.12.08

OHP R GA7064 86.02.06

HD 58343 B3Ve

vsini < 40

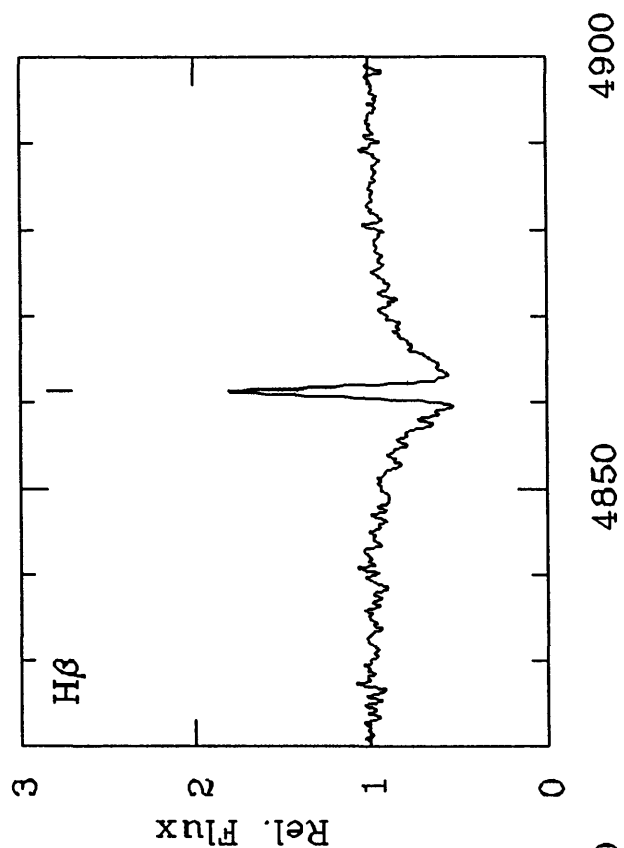
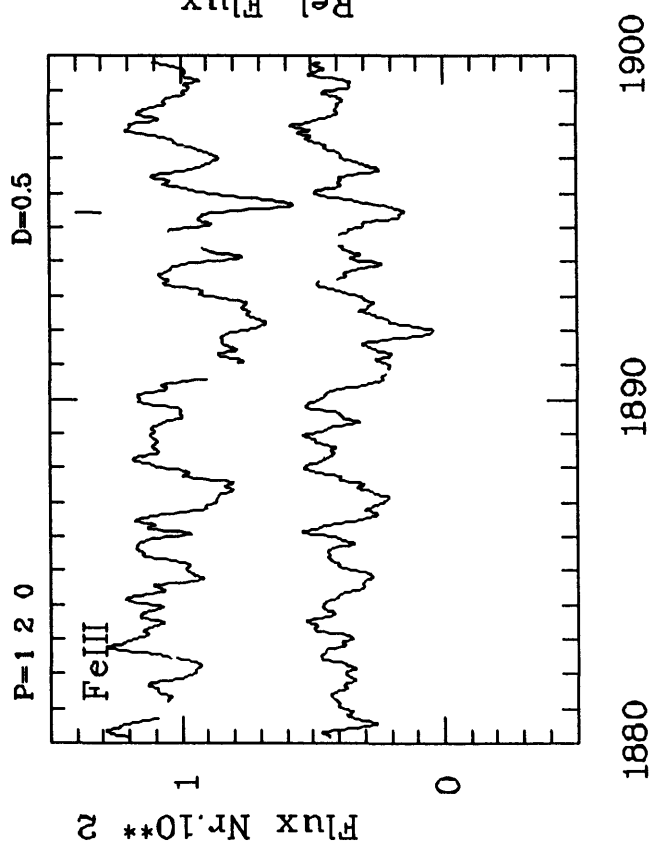
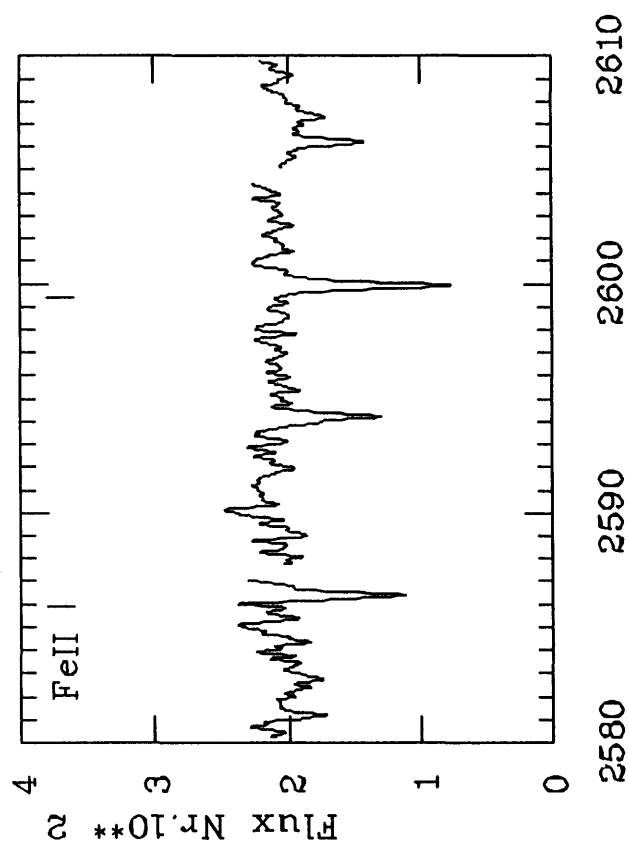


IUE 3 13496 L 81.03.15 - 3 15978 L 82.01.06

IUE 2 12515 L 82.02.05

OHP B GB9478 87.03.10

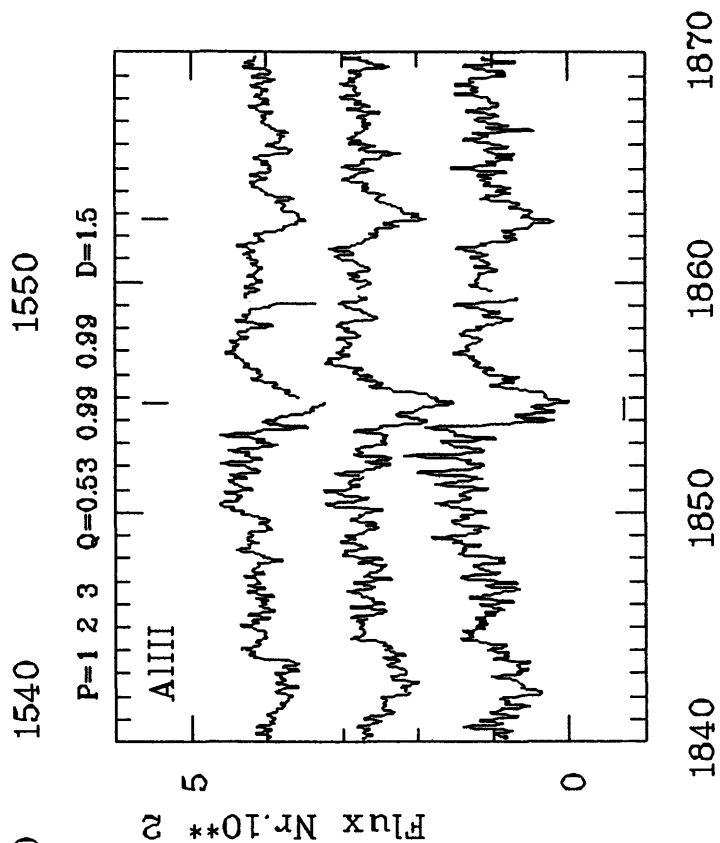
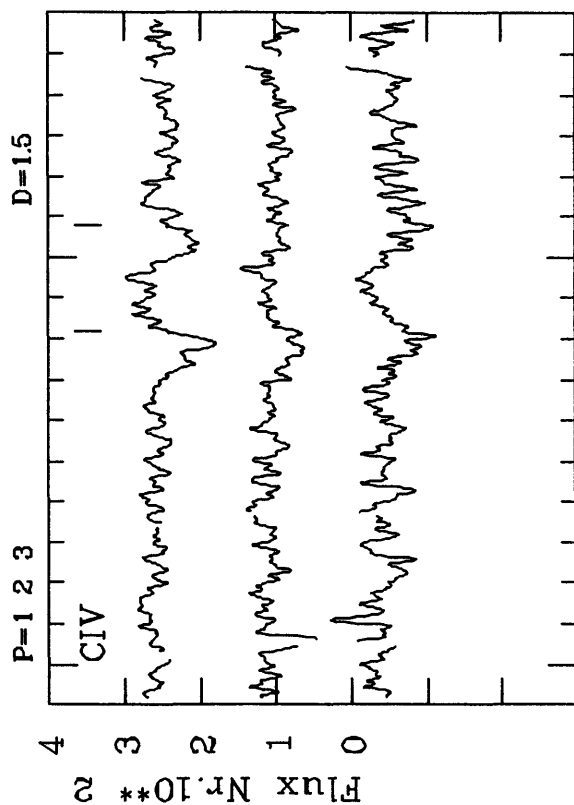
HD 58343 B3Ve

 $v \sin i < 40$ 

IUE 3 13496 L 81.03.15 - 3 15978 L 82.01.06
 IUE 2 12515 L 82.02.05
 OHP B GB9478 87.03.10

HD 58715 B8Ve

vsini 245

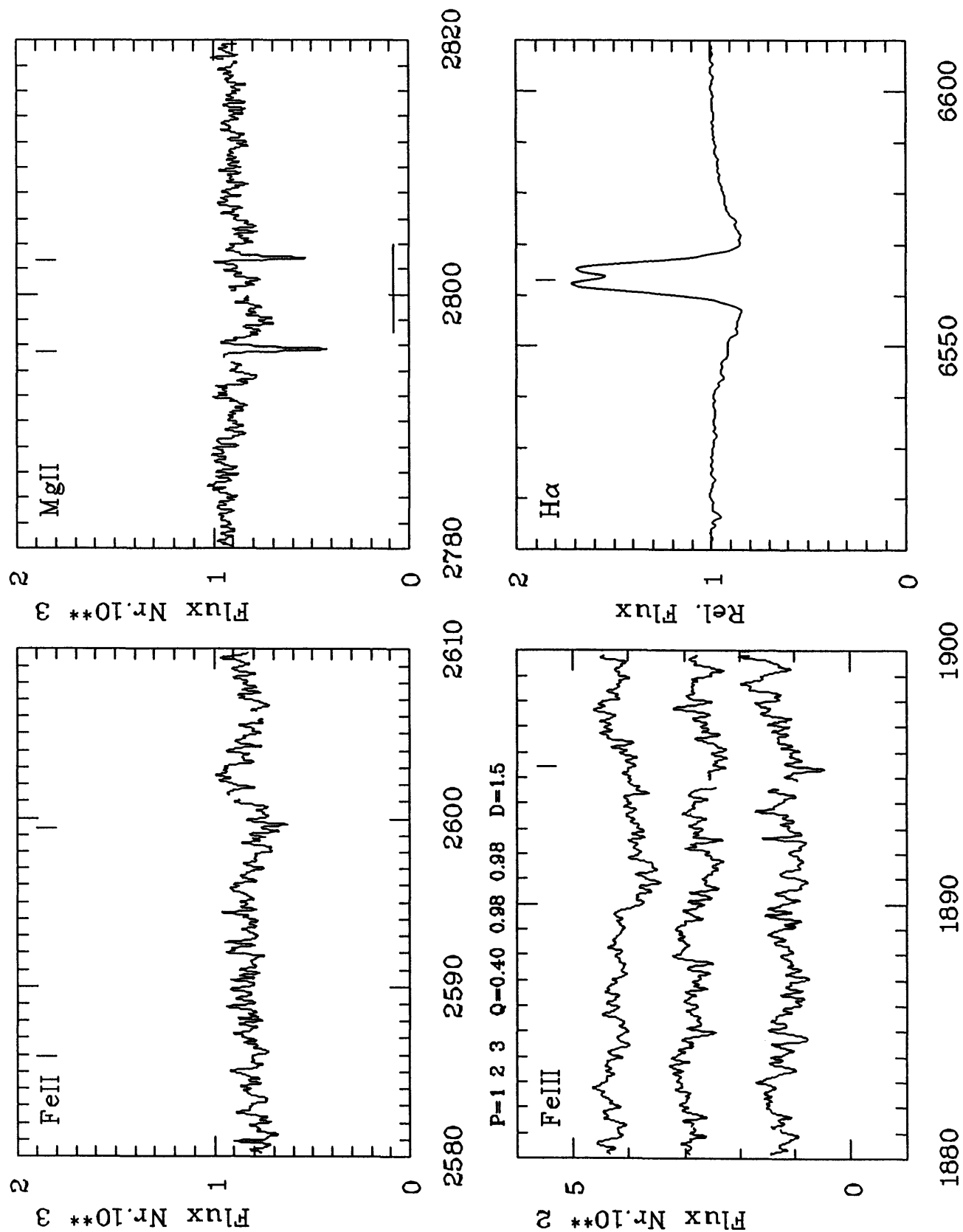


IUE 3 28105 L 86.04.05 - 3 29374 L 86.10.05 - 3 31890 L 87.09.20
 IUE 1 10104 L 87.02.10

OHP R CCD20012 88.03.27

HD 58715 B8Ve

vsini 245

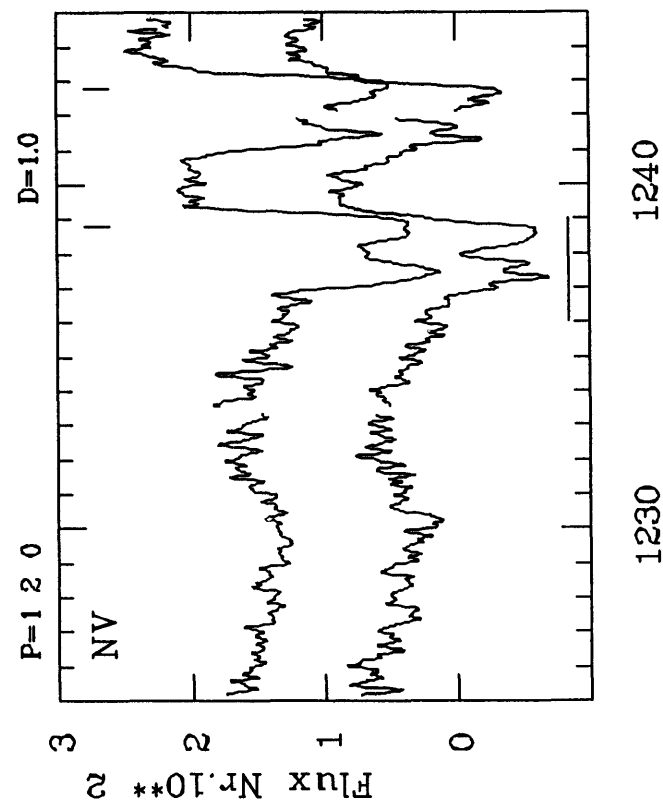
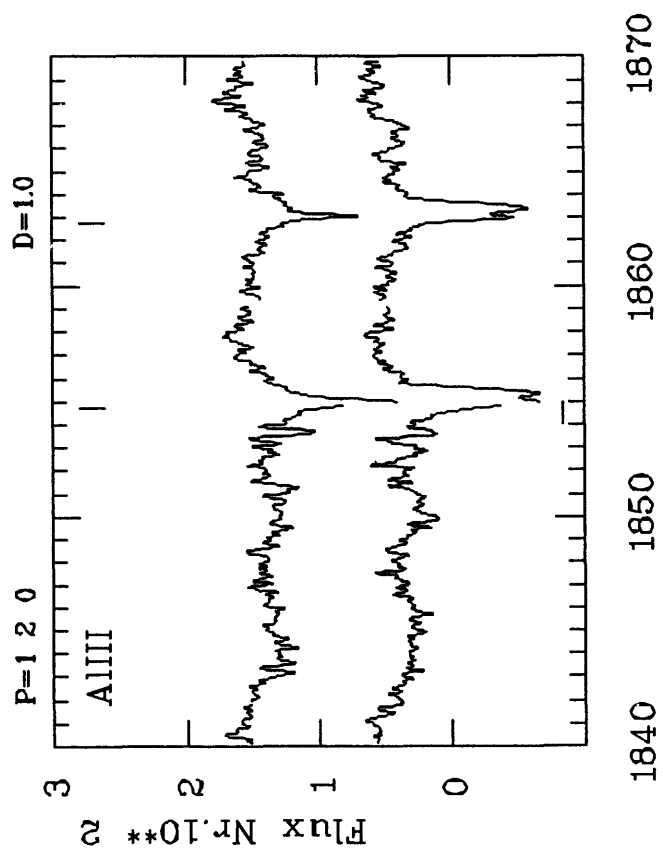
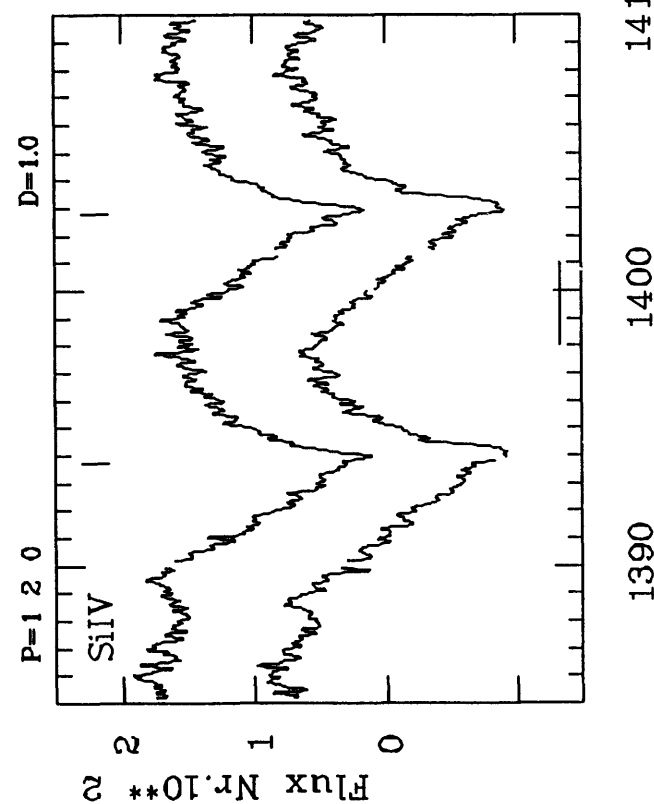
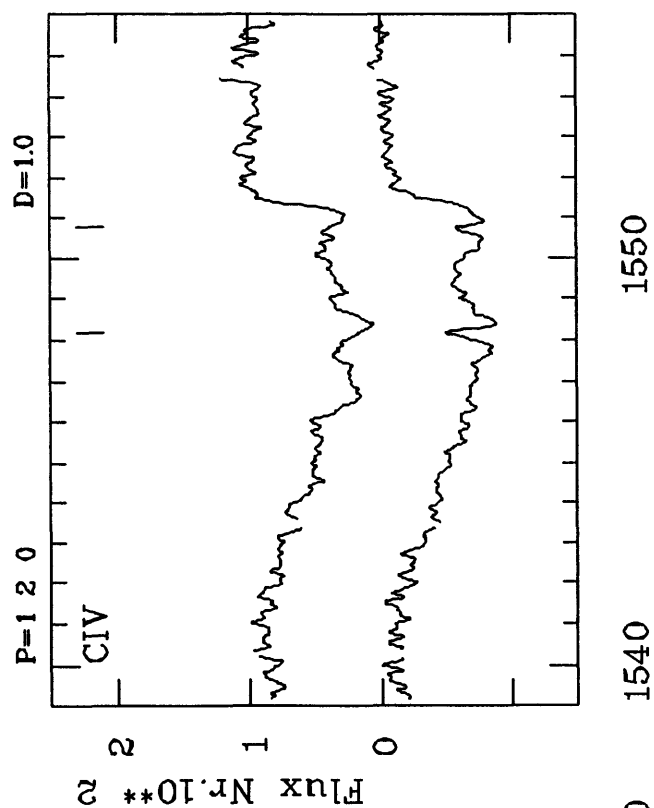


IUE 3 28105 L 86.04.05 - 3 29374 L 86.10.05 - 3 31890 L 87.09.20
 IUE 1 10104 L 87.02.10

OHP R CCD20012 88.03.27

HD 58978 B0.5IVe

vsini 280



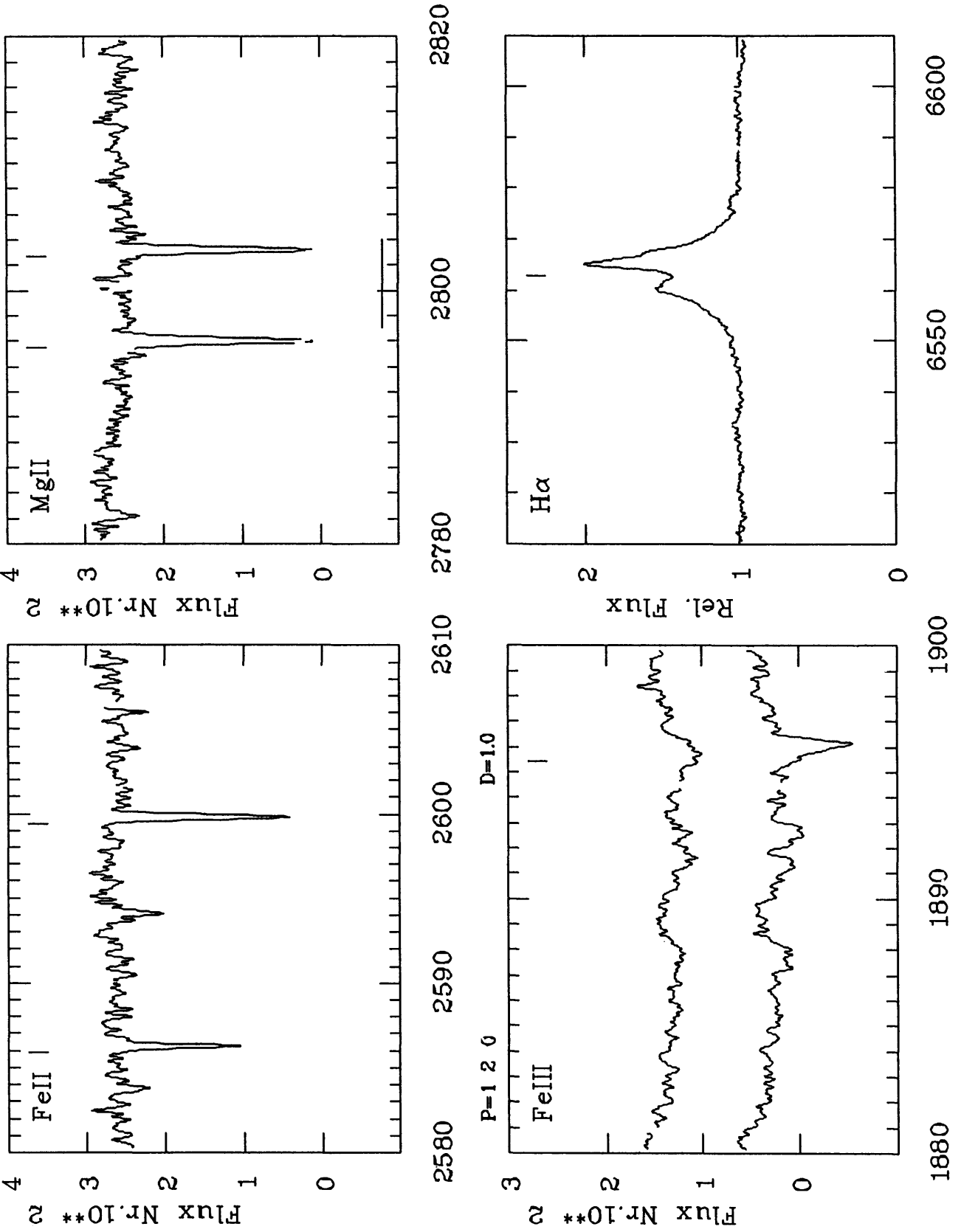
IUE 3 28457 L 86.06.08 - 3 30901 L 87.05.03

IUE 1 06830 L 85.09.30

ESO R G13815 88.10.23

HD 58978 B0.5IVe

vsini 280

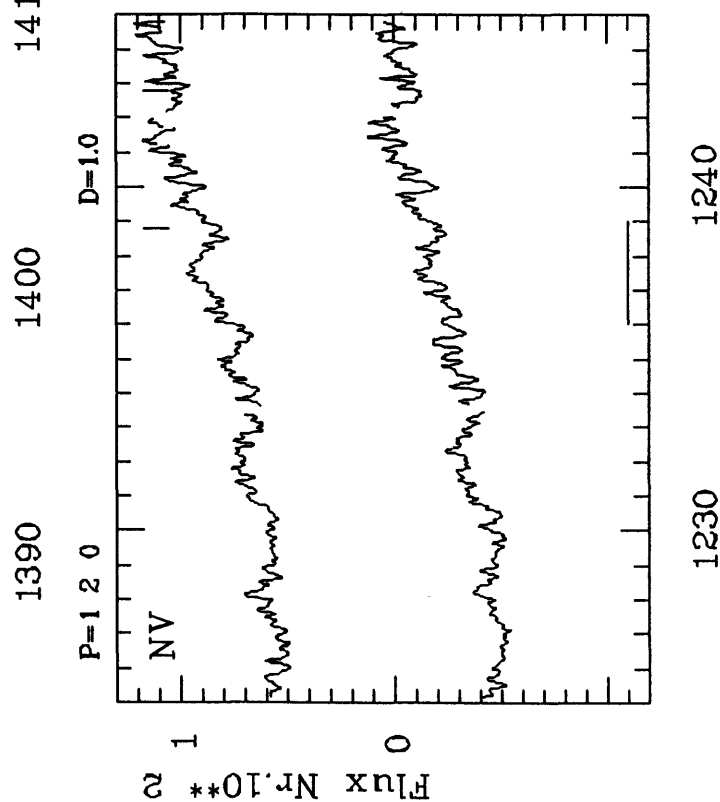
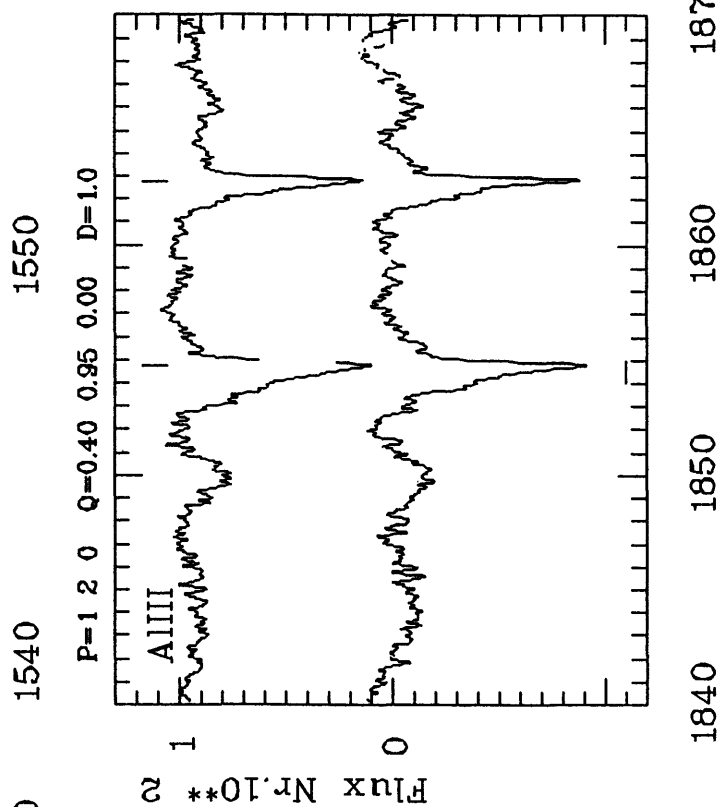
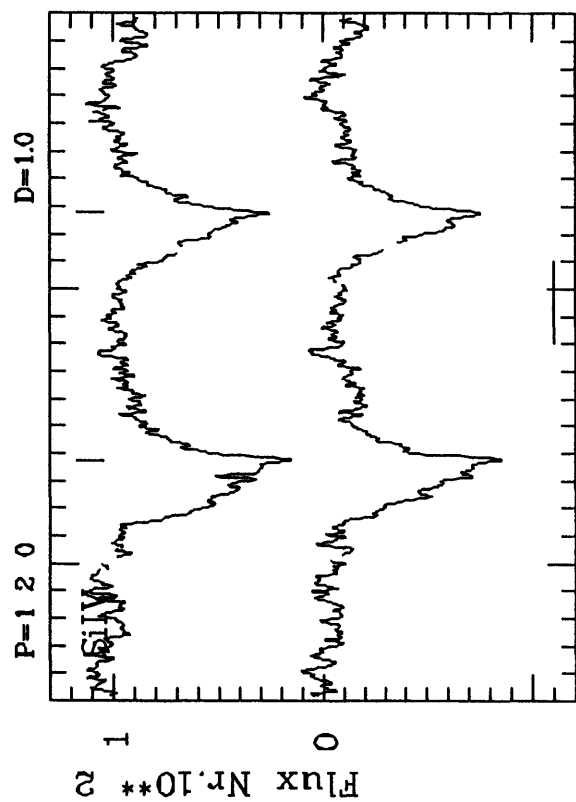
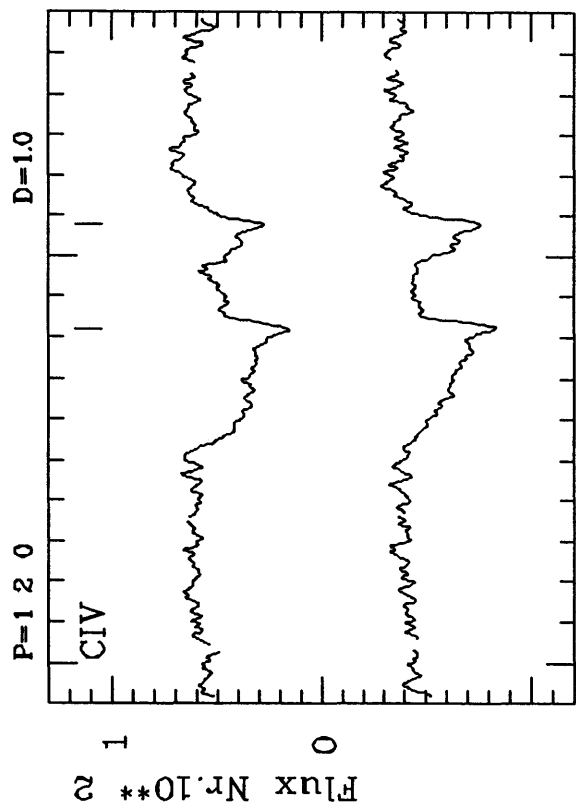


IVE 3 28457 L 86.06.08 - 3 30901 L 87.05.03
IVE 1 06830 L 85.09.30

ESO R G13815 88.10.23

HD 60606 B3Ve

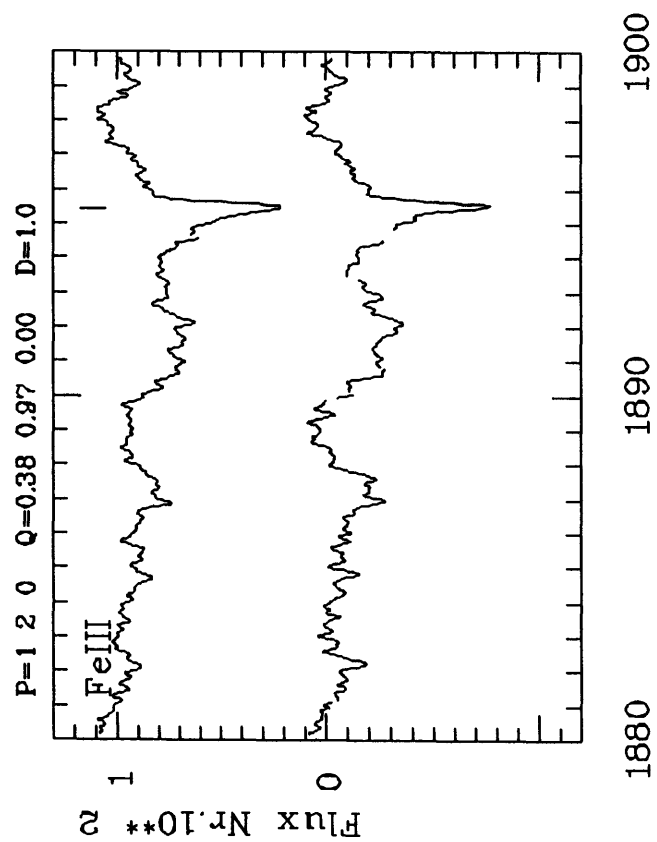
vsini 230



IUE 3 26123 L 85.06.08 - 3 29375 L 86.10.05

HD 60606 B3Ve

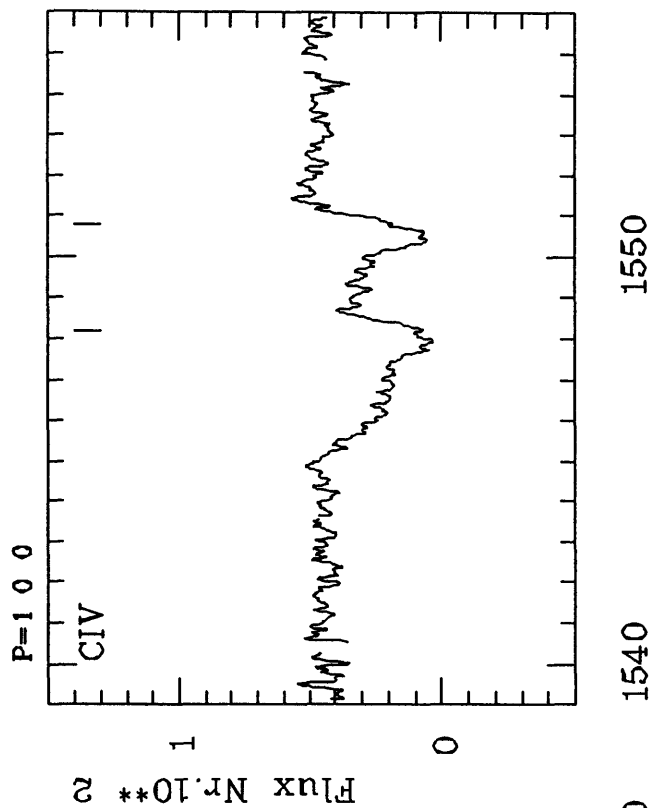
vsini 230



IUE 3 26123 L 85.06.08 - 3 29375 L 86.10.05

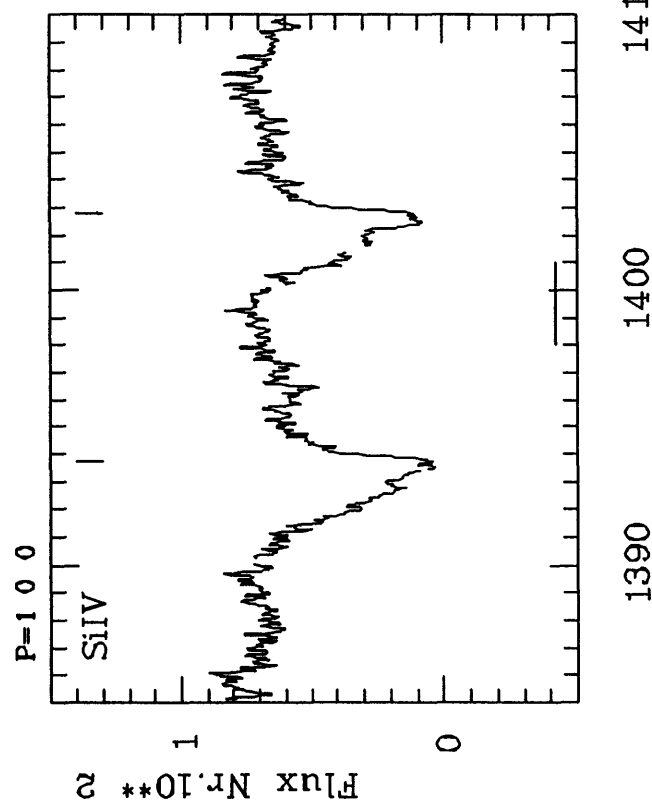
HD 60855 B3IVe

vsini 230



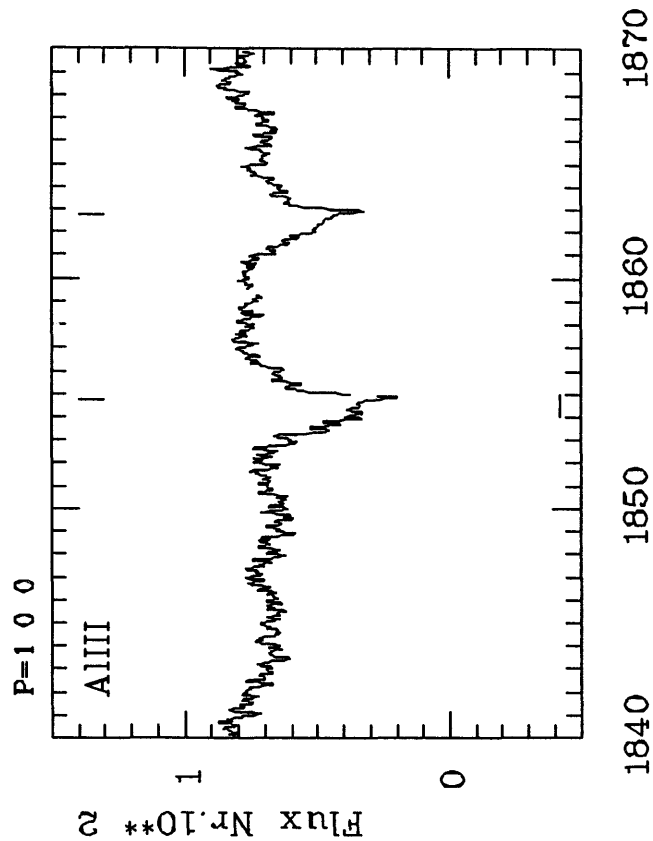
1540

1550



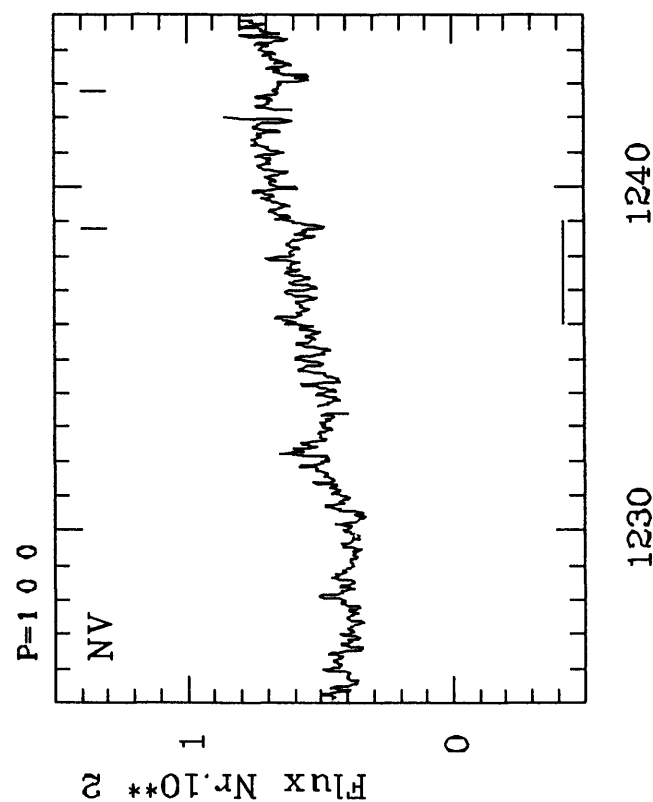
1390

1410



1840

1870

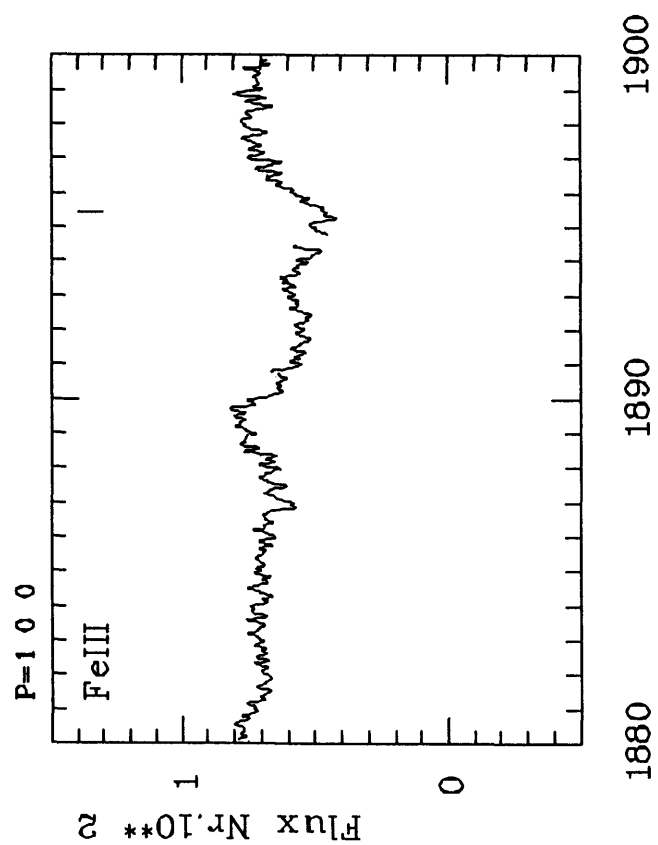


1230

1240

HD 60855 B3IVe

vsini 230

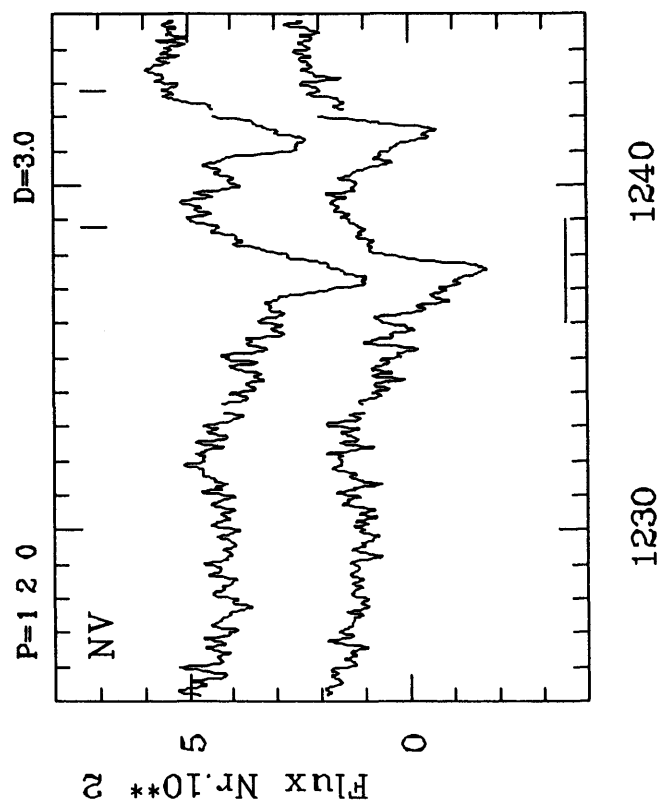
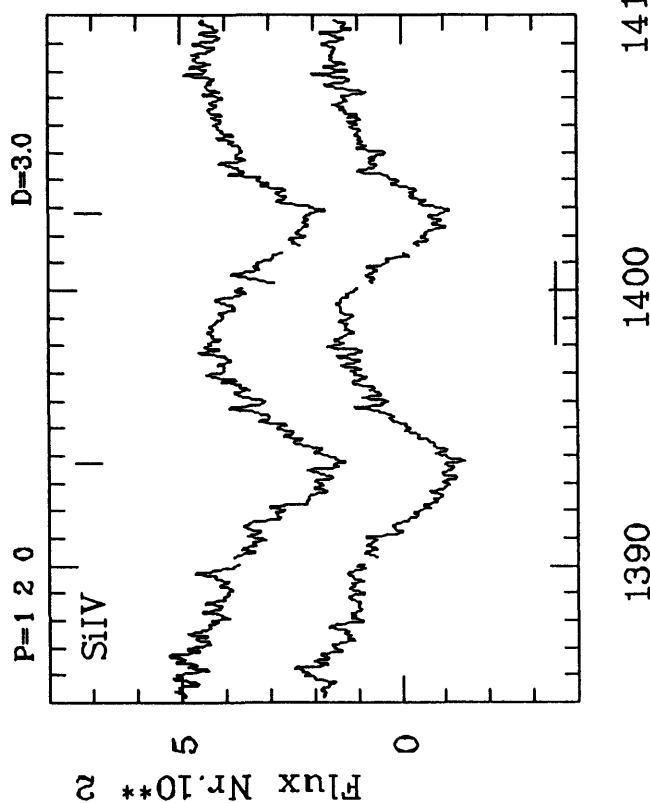
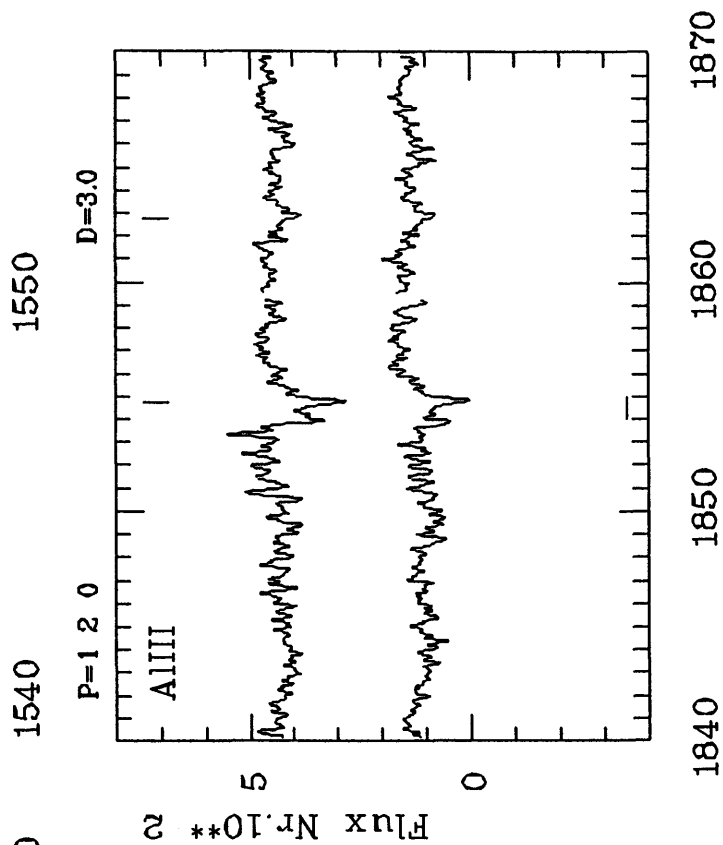
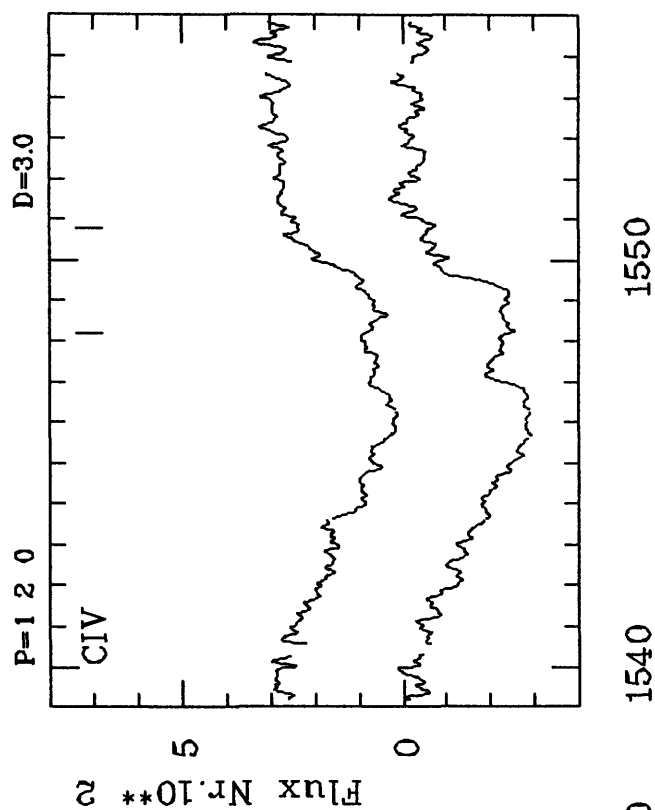


IUE 3 21915 L 83.12.30

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HD 63462 B1IVe

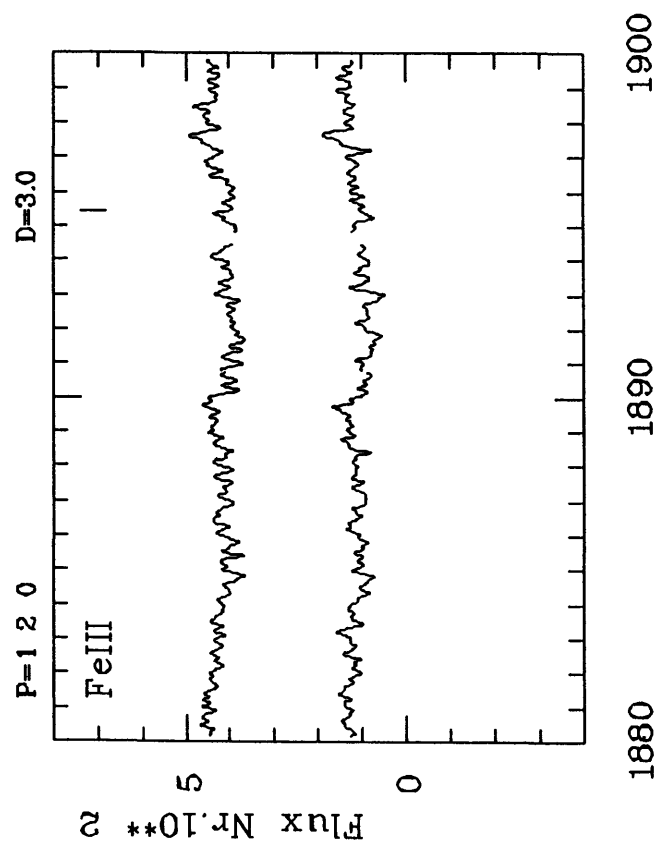
vsini 320



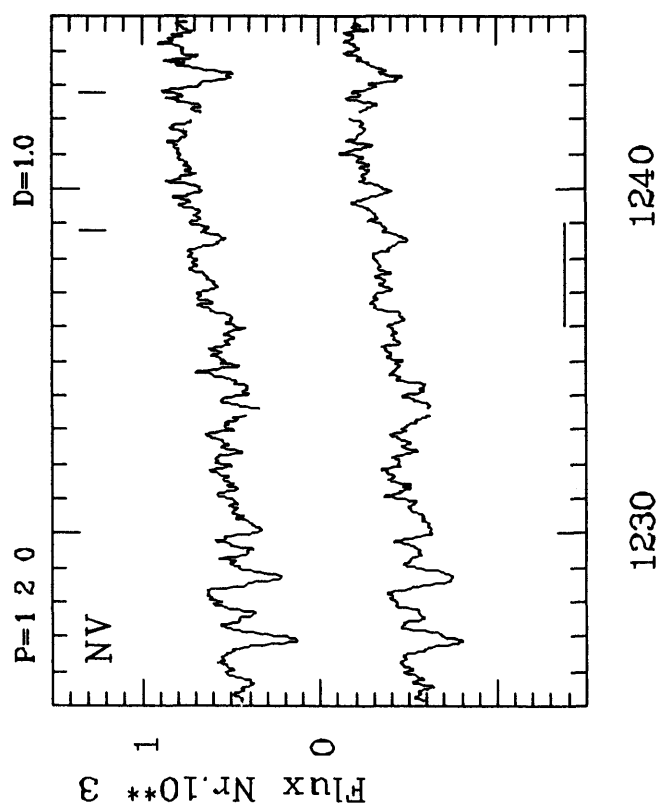
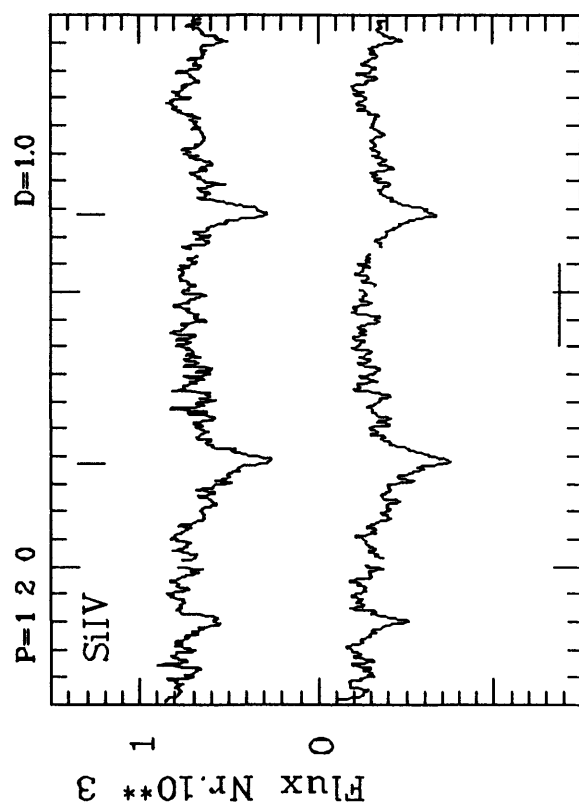
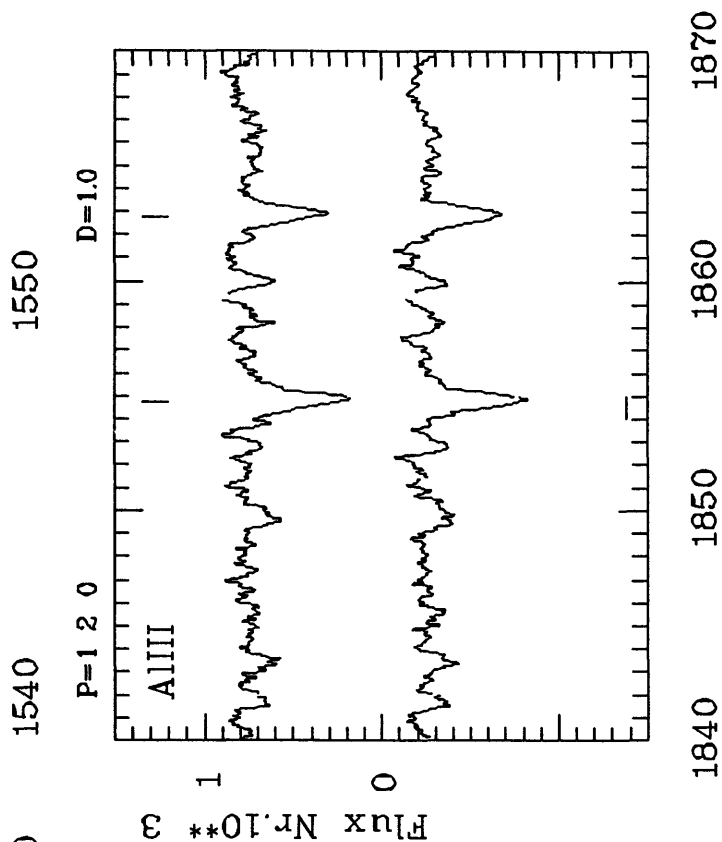
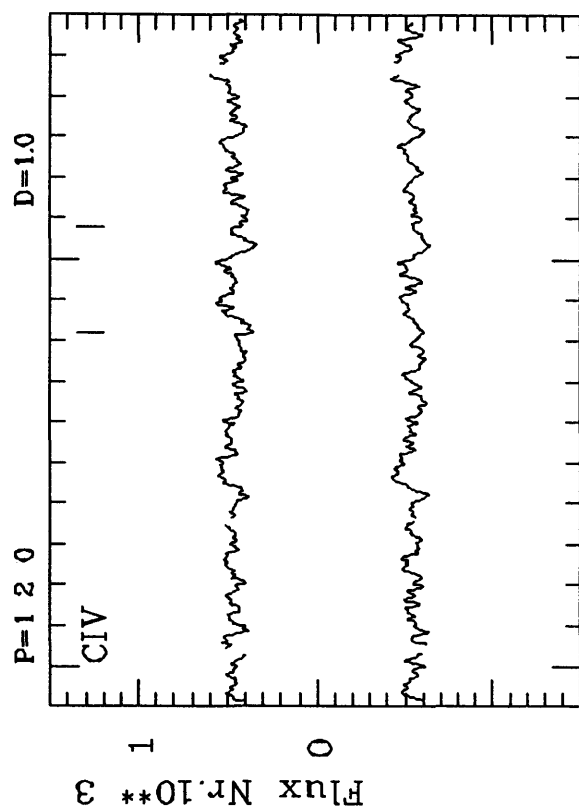
HD 63462

B1IVe

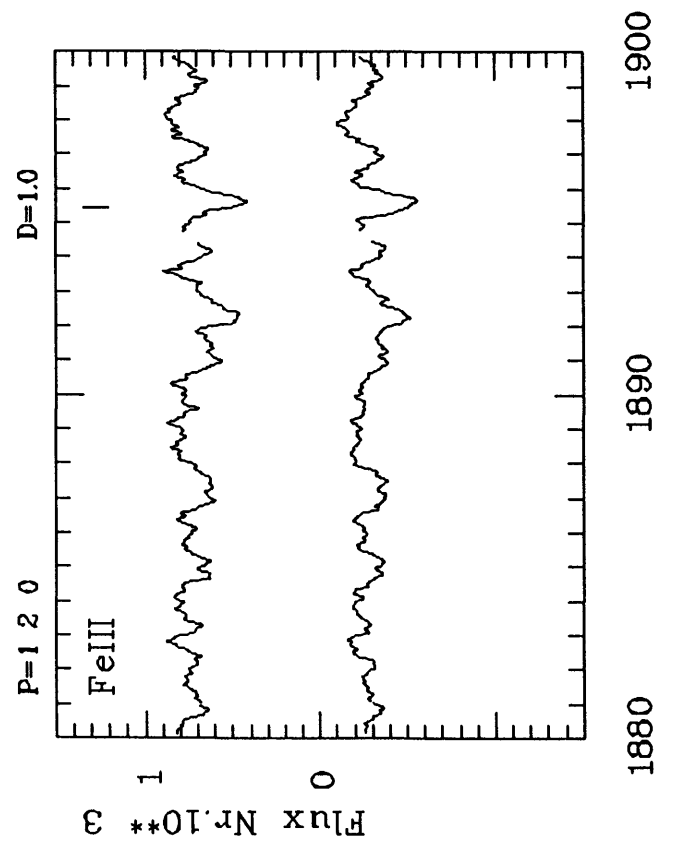
vsini 320



IUE 3 20838 L 83.08.29 - 3 21951 L 84.01.07

HD 65575 B3IV_{pe}

HD 65575 B3IV_{pe}

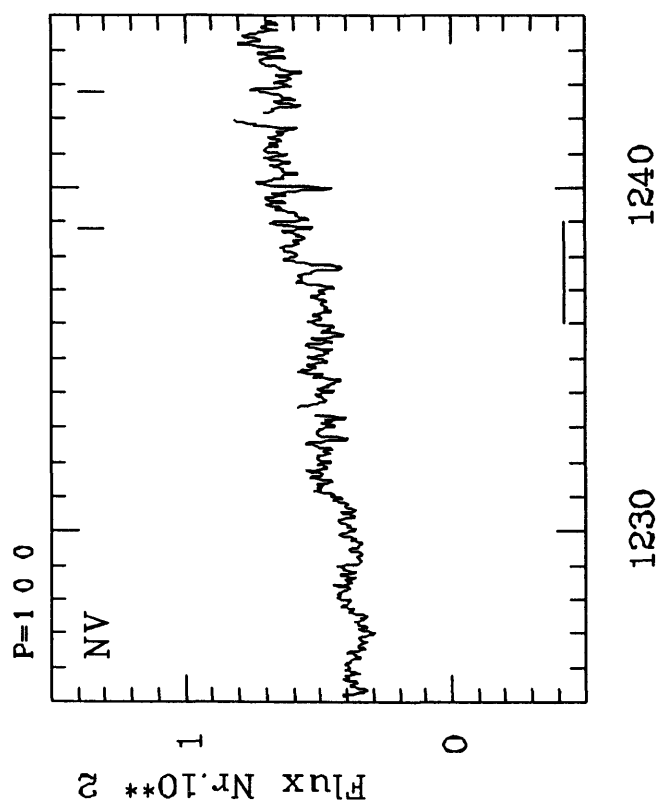
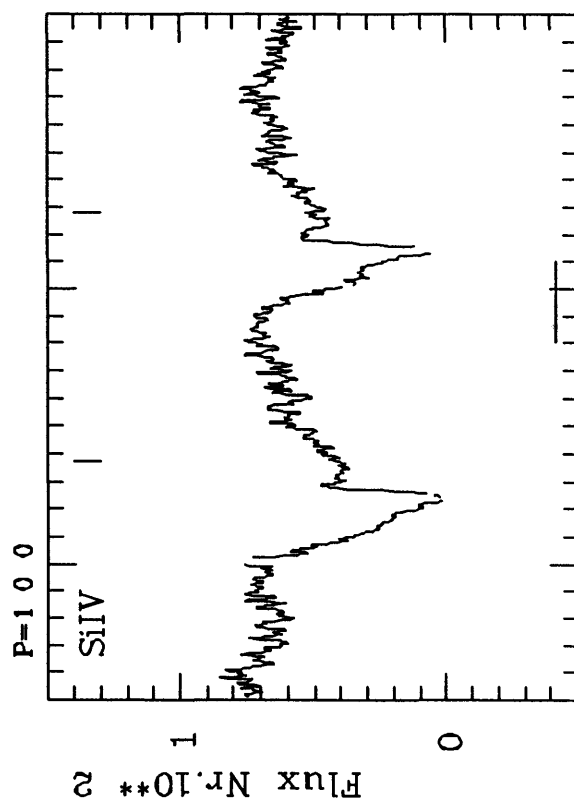
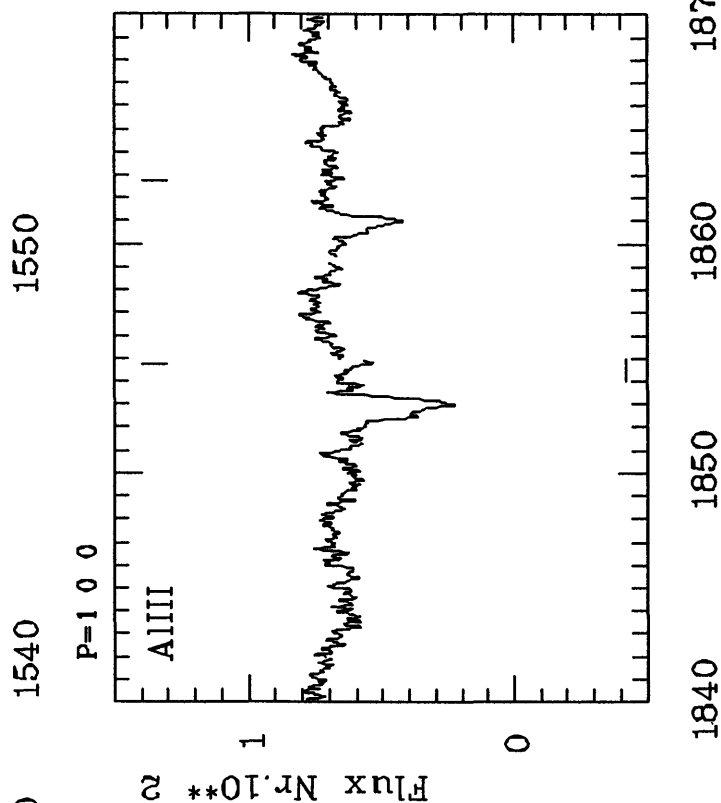
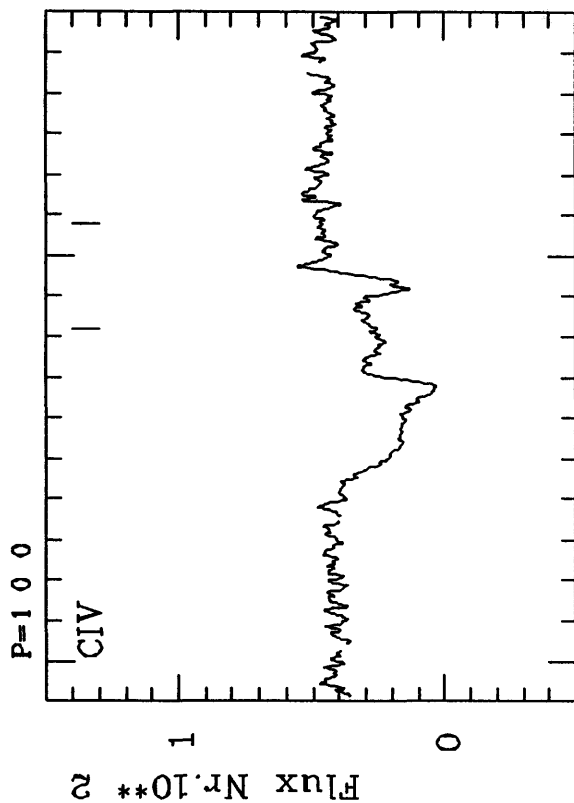


IUE 3 20355 L 83.07.02 - 3 21952 L 84.01.07

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HD 66194 B2.5IVe

vsini 200

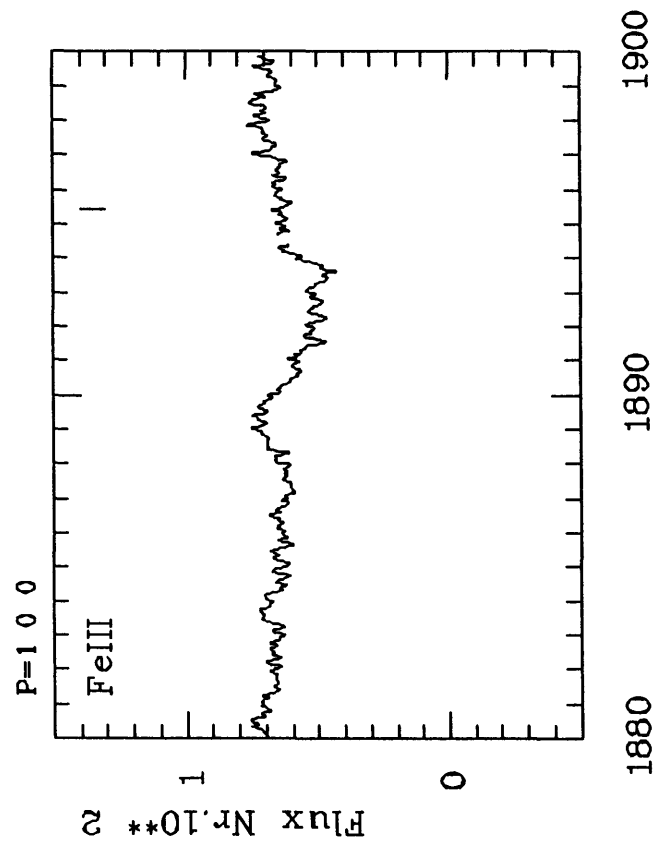
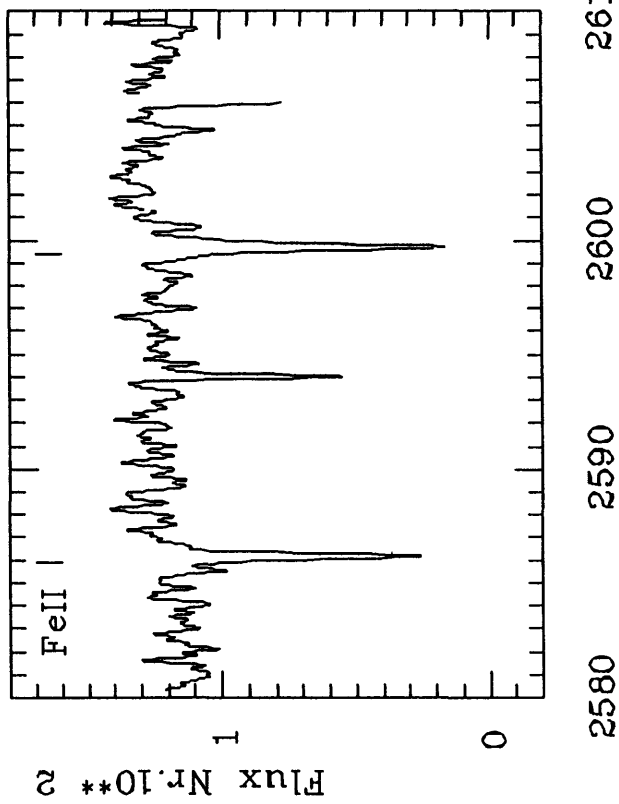
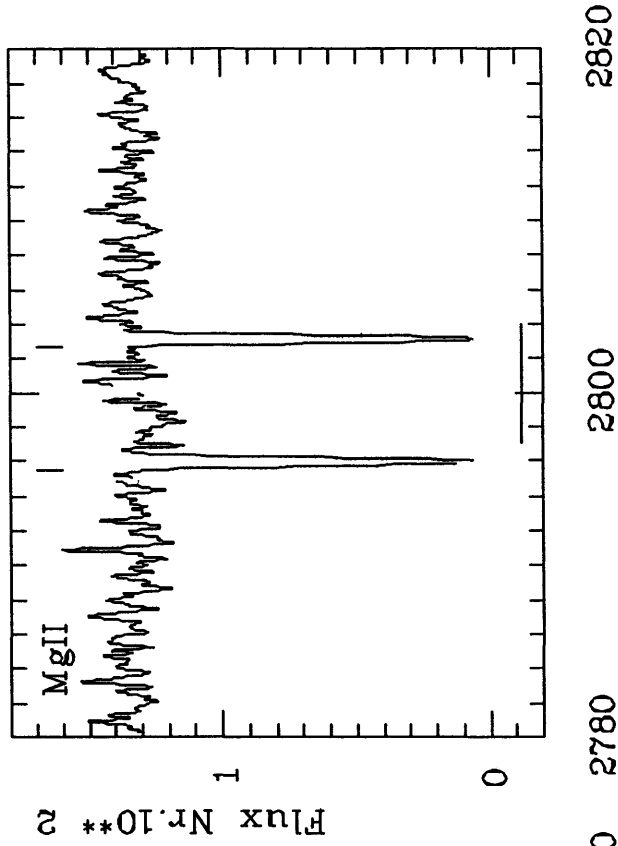


IUE 3 31232 L 87.06.22
 IUE 1 11066 L 87.06.22

HD 66194

B2.5IVe

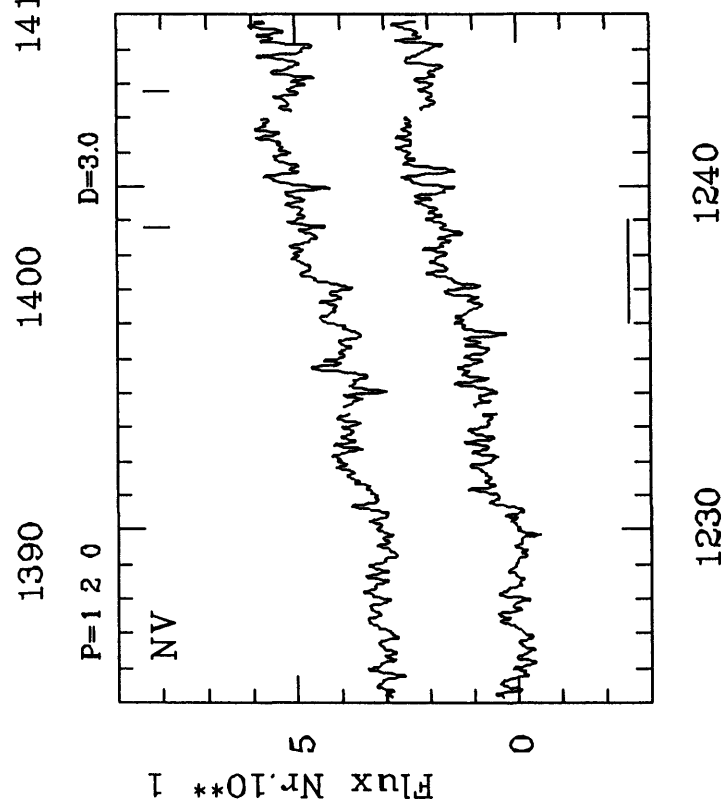
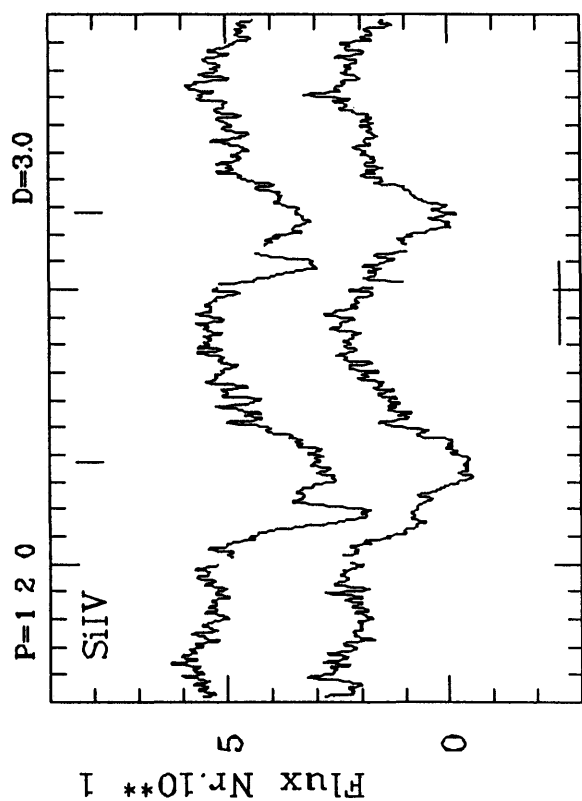
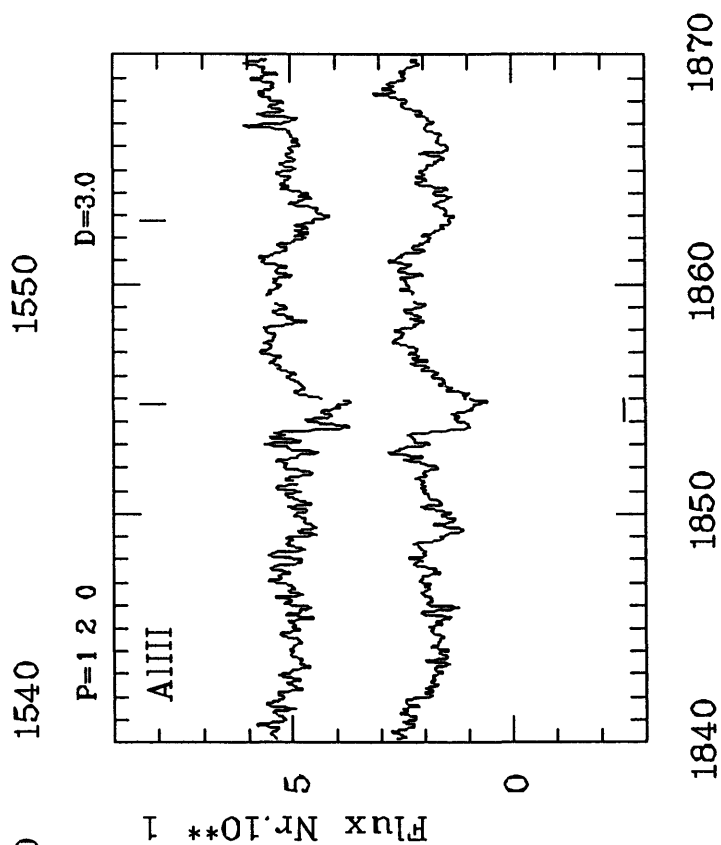
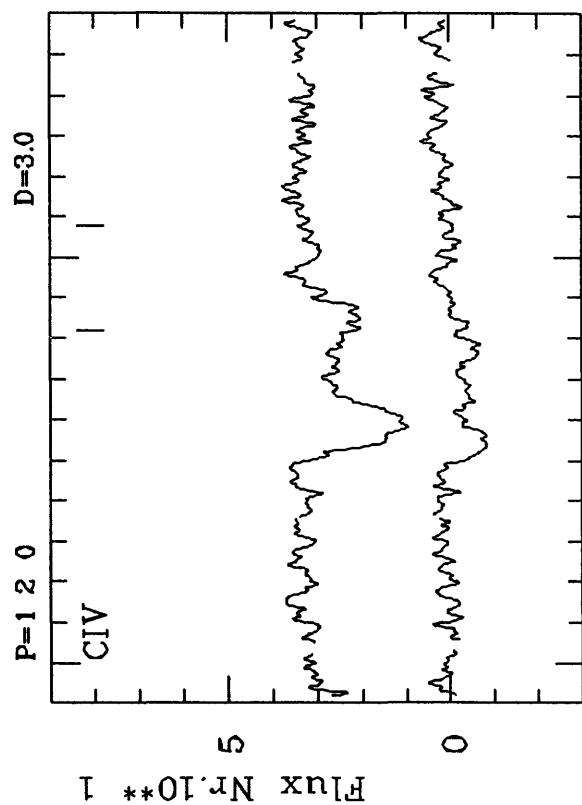
vsini 200



IUE 3 31232 L 87.06.22
IUE 1 11066 L 87.06.22

HD 67536 B2.5Vne

vsini 290



IUE 3 20356 L 83.07.02 - 3 27503 L 86.01.11

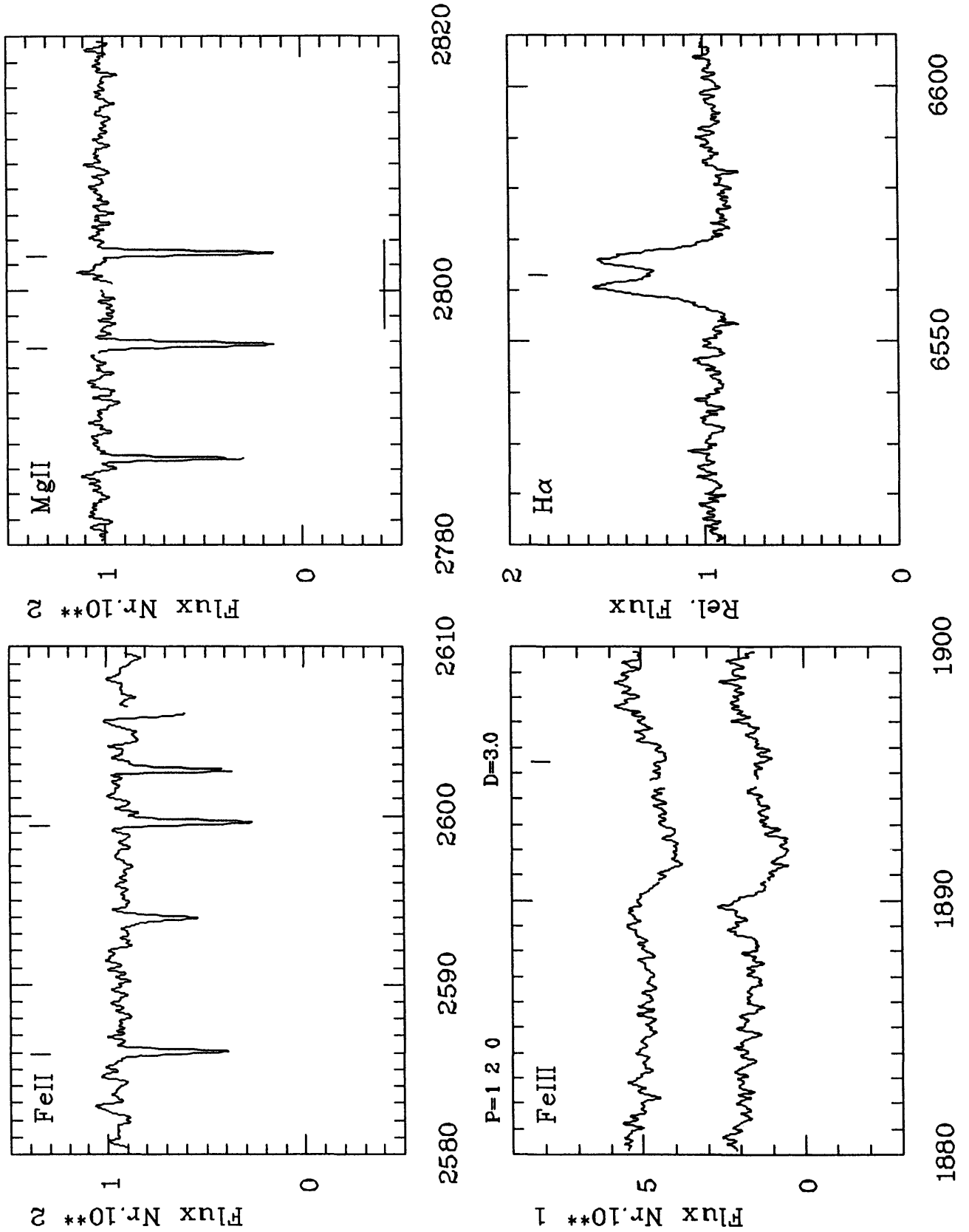
IUE 1 05741 L 85.04.13

ESO R F9256

88.04.08

HD 67536 B2.5Vne

vsini 290



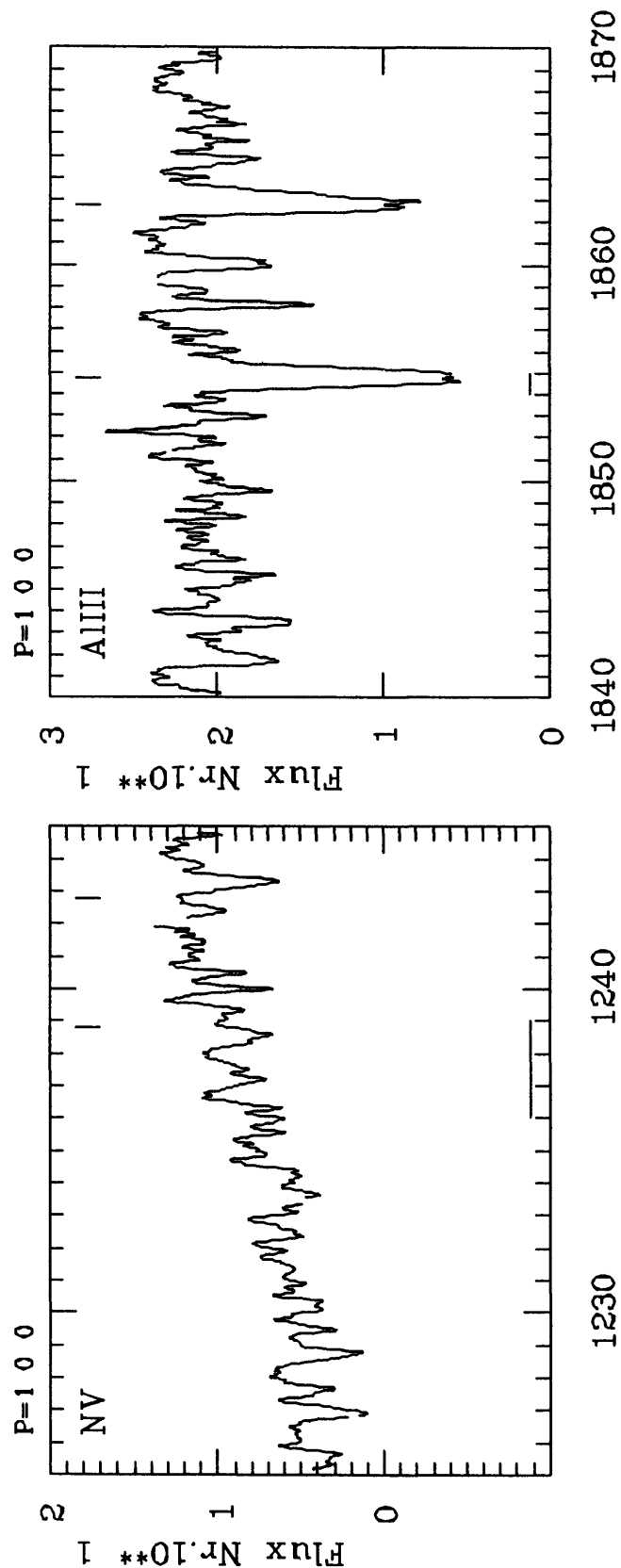
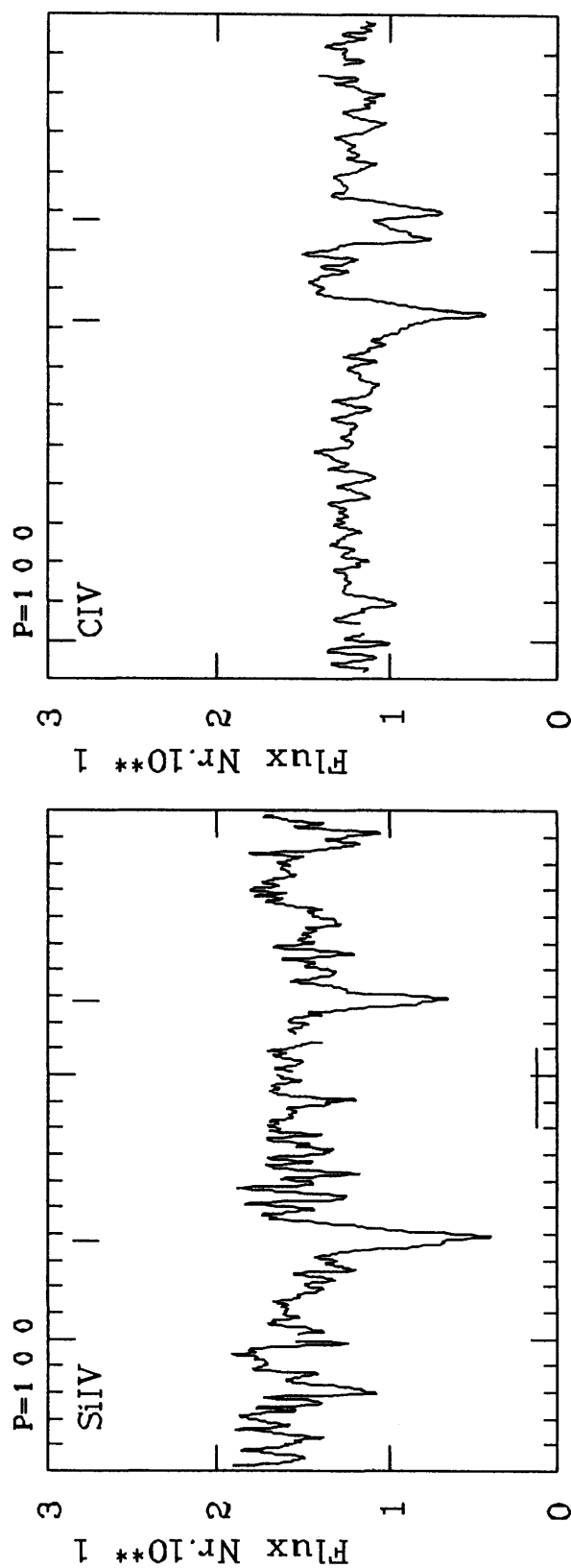
IUE 3 20356 L 83.07.02 - 3 27503 L 86.01.11

IUE 1 05741 L 85.04.13

ESO R F9256

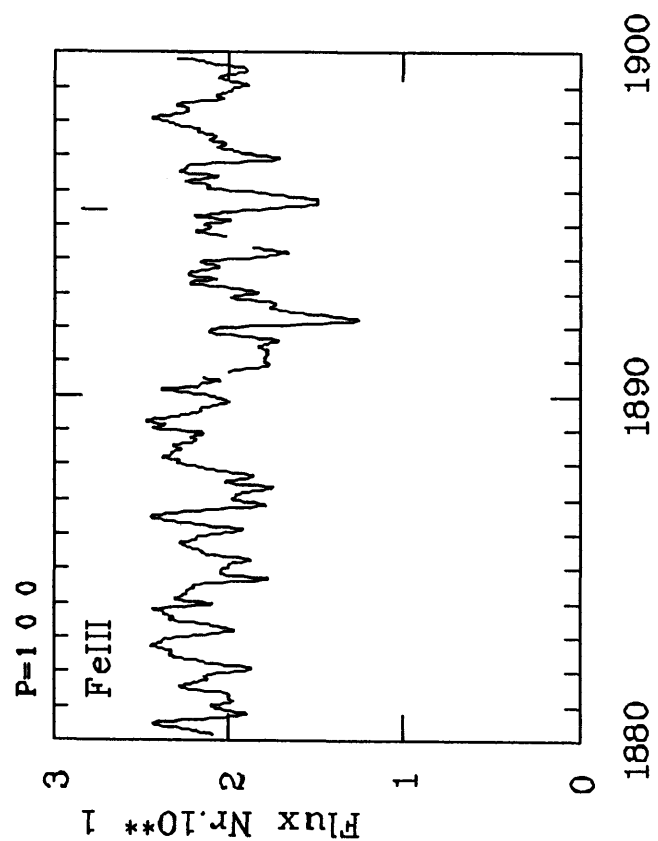
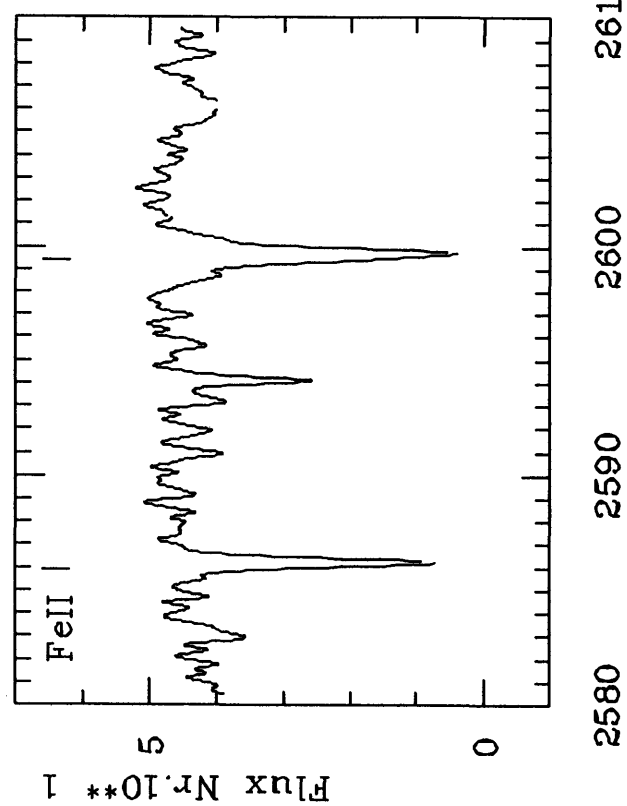
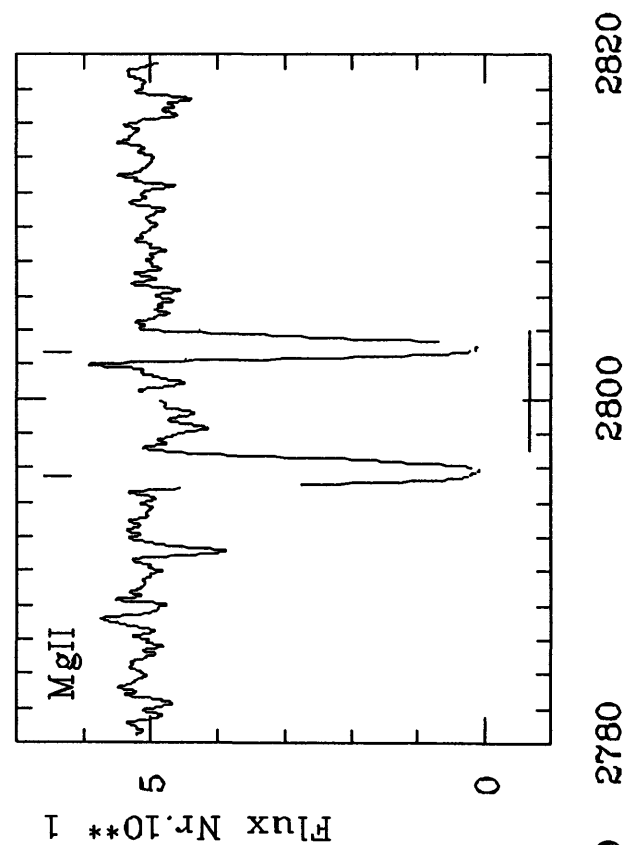
88.04.08

HD 67888 B4(III-V)e



IVE 3 31233 L 87.06.22
 IVE 1 11067 L 87.06.22

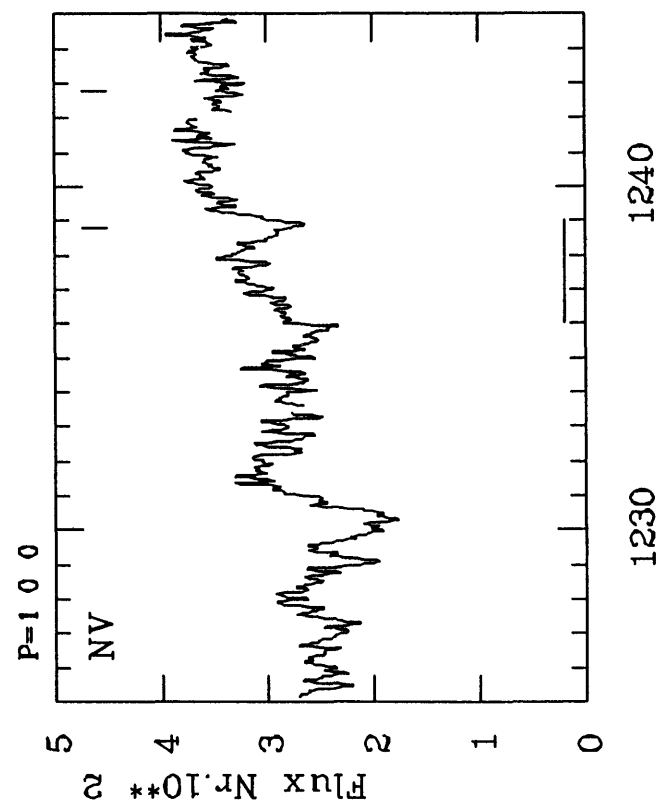
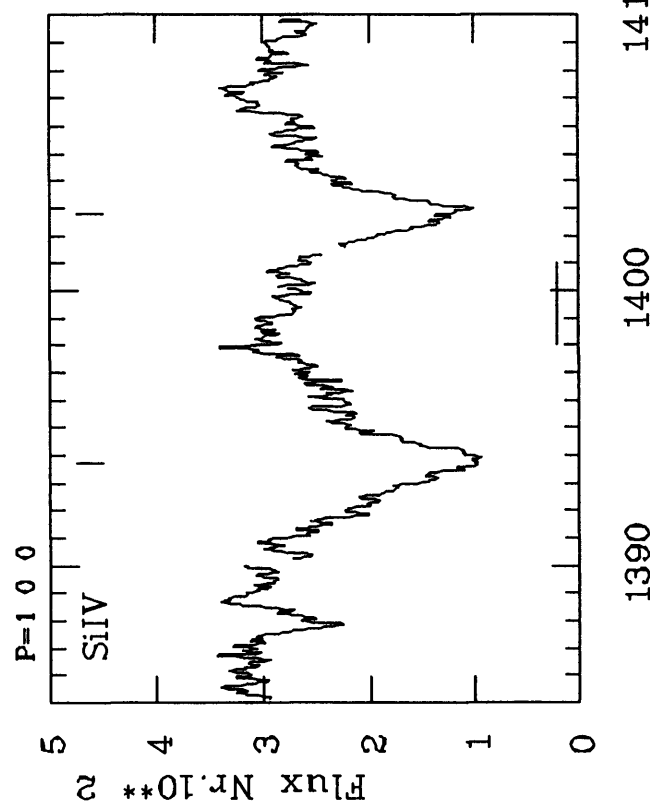
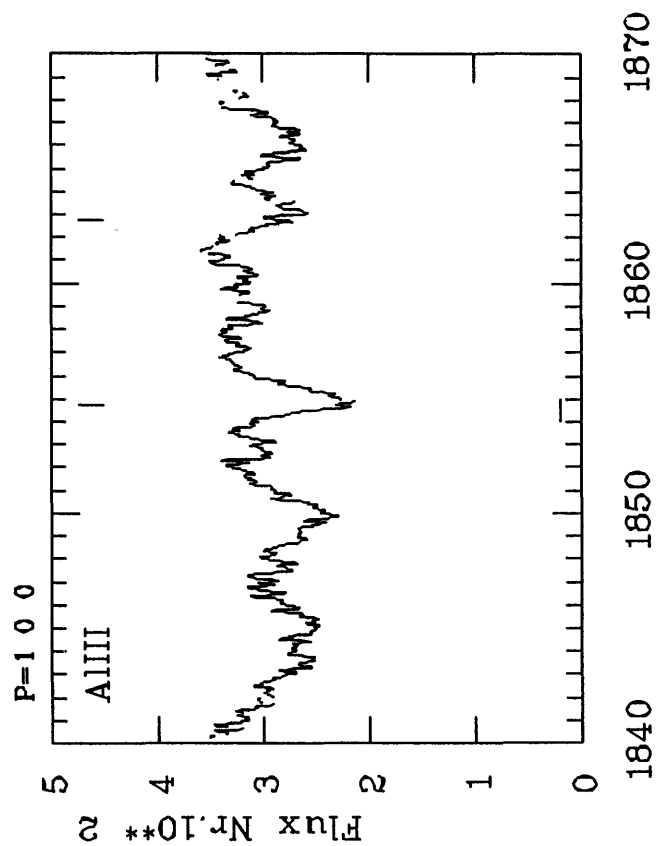
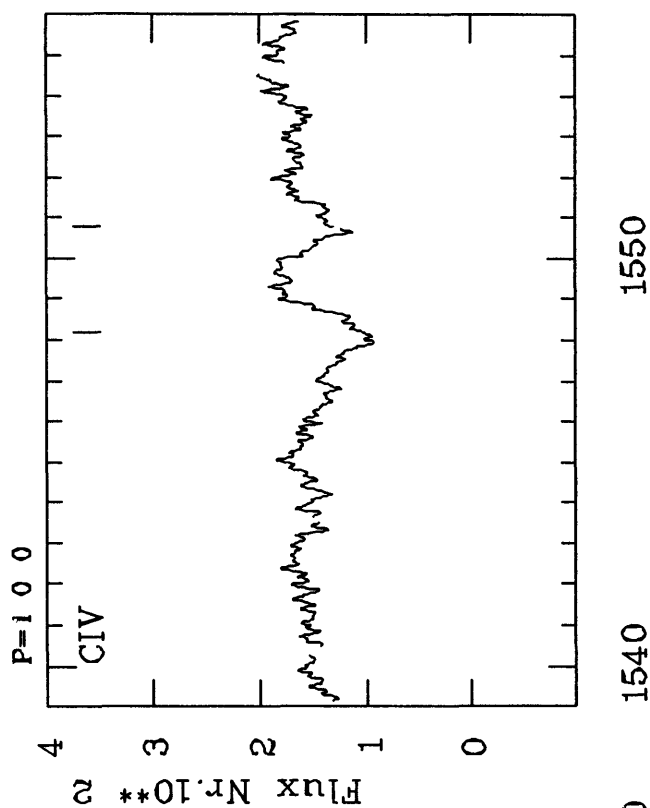
HD 67888 B4(III-V)e



IVE 3 31233 L 87.06.22
 IVE 1 11067 L 87.06.22

HD 68980 B1.5IVe

vsini 115



IUE 3 22119 L 84.01.27

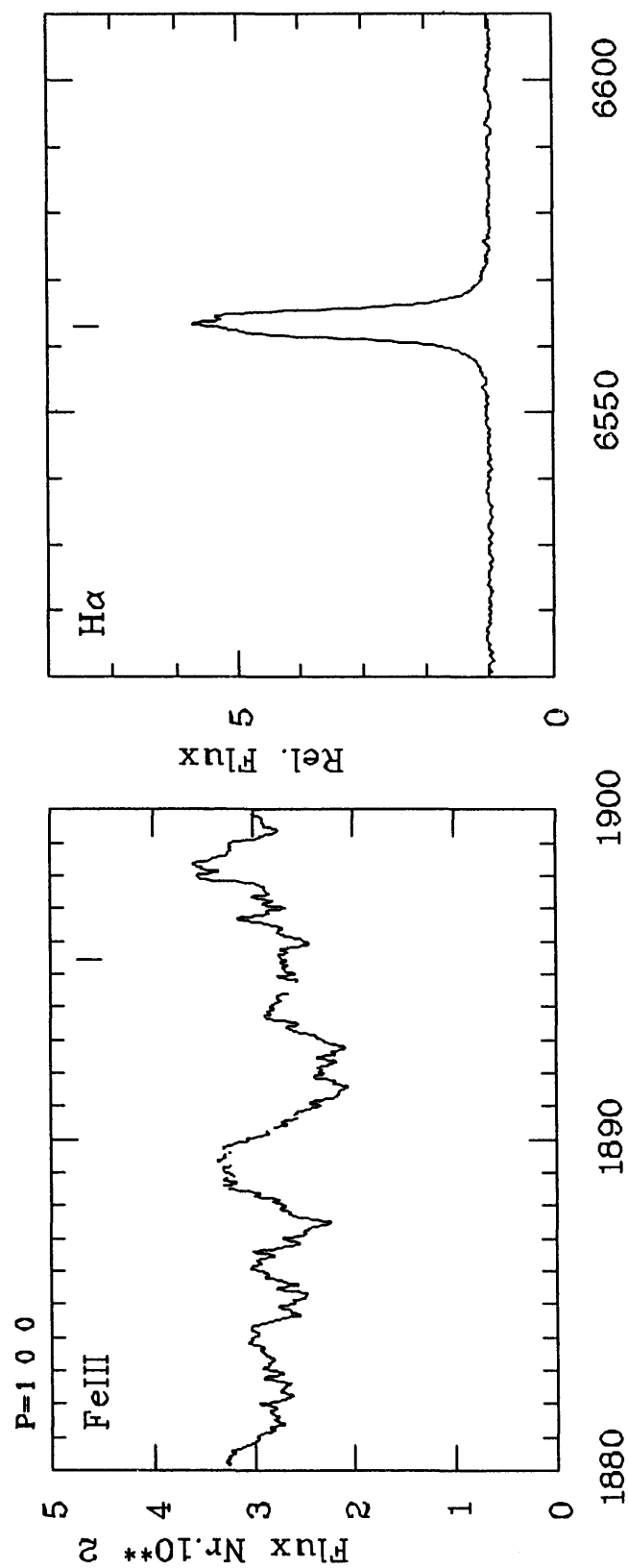
ESO R F9263

88.04.09

HD 68980

B1.5IVe

vsini 115



IUE 3 22119 L 84.01.27

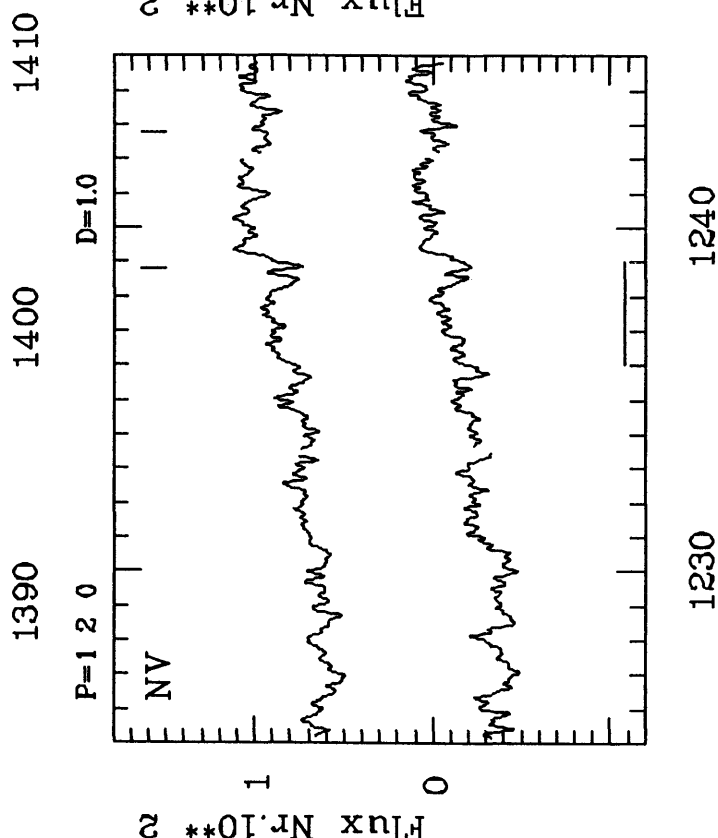
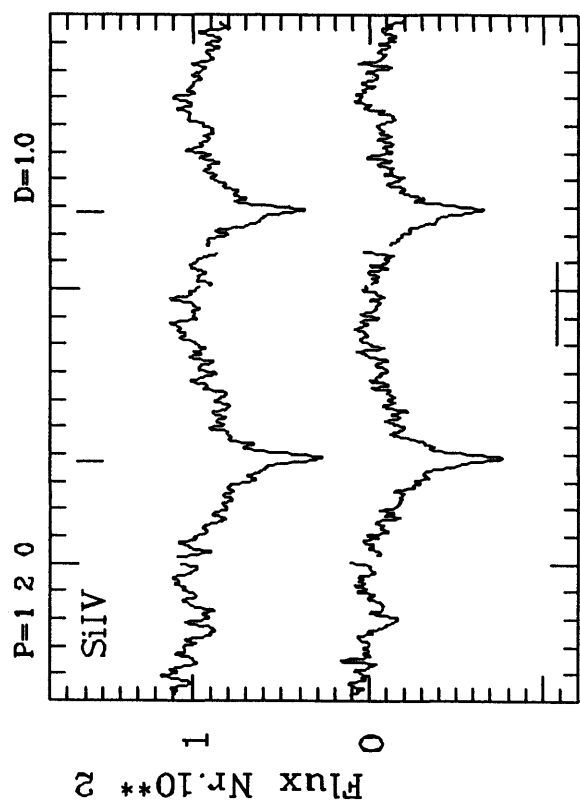
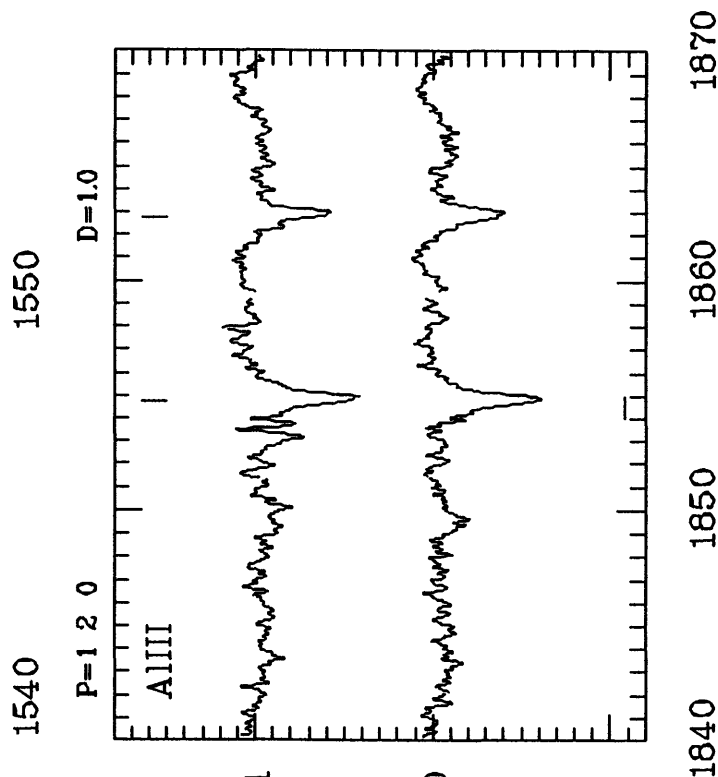
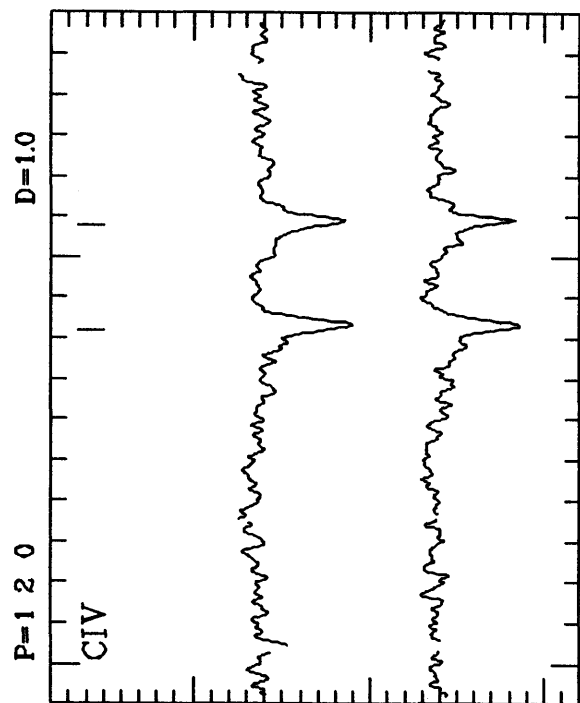
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ESO R F9263

88.04.09

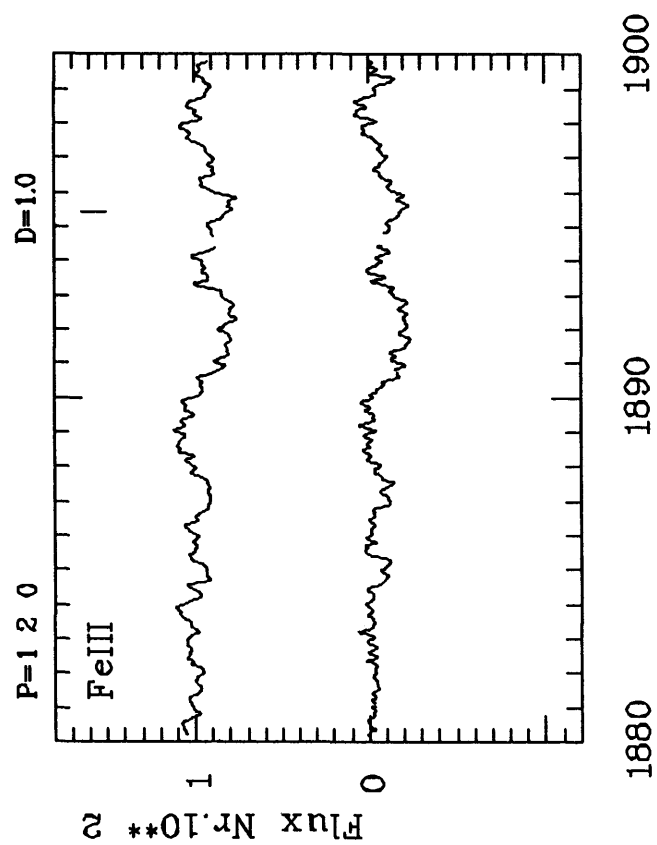
HD 72067 B2.5Ve

vsini 150



HD 72067 B2.5Ve

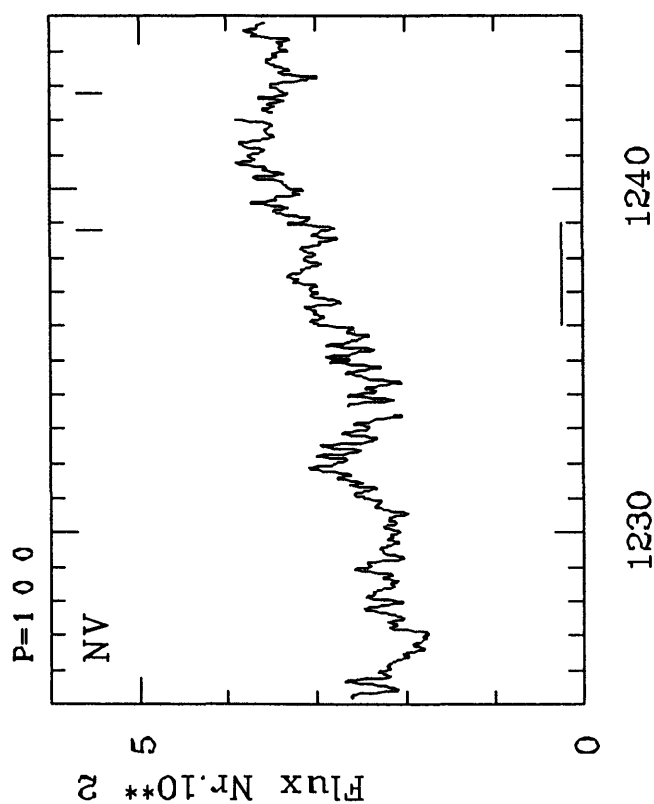
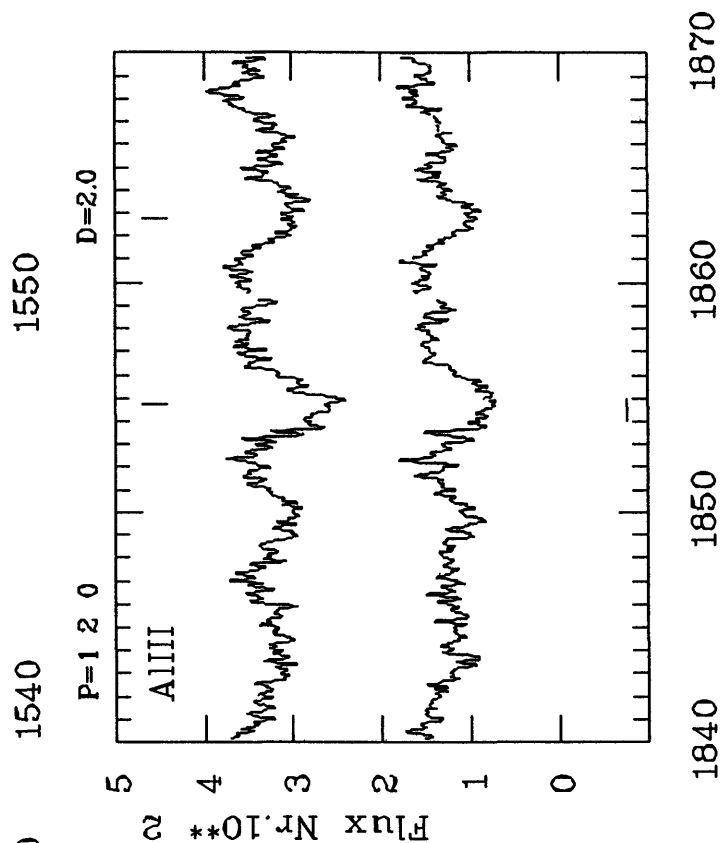
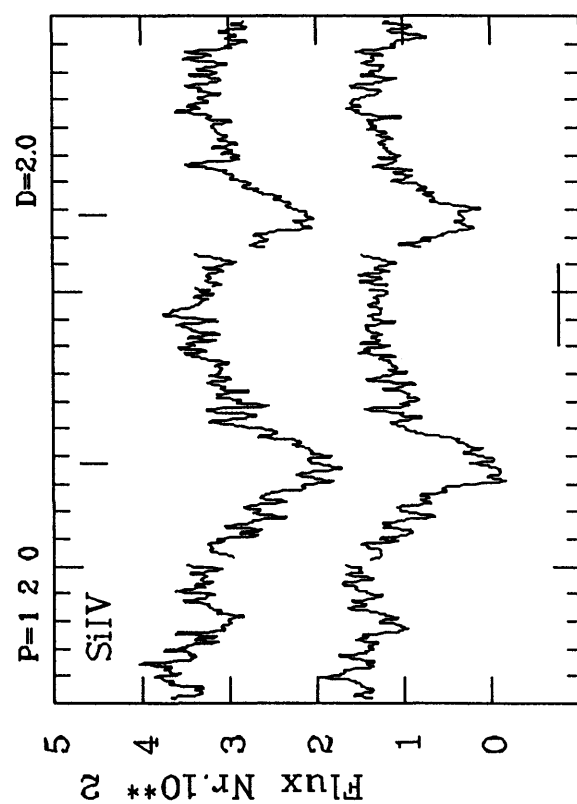
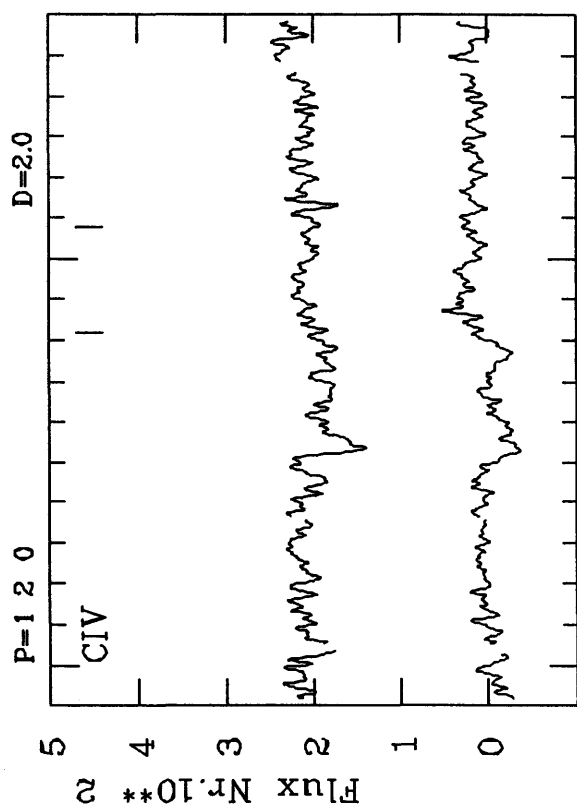
vsini 150



IUE 3 26122 L 85.06.08 - 3 29376 L 86.10.05

HD 75311 B2.5Ve

vsini 240



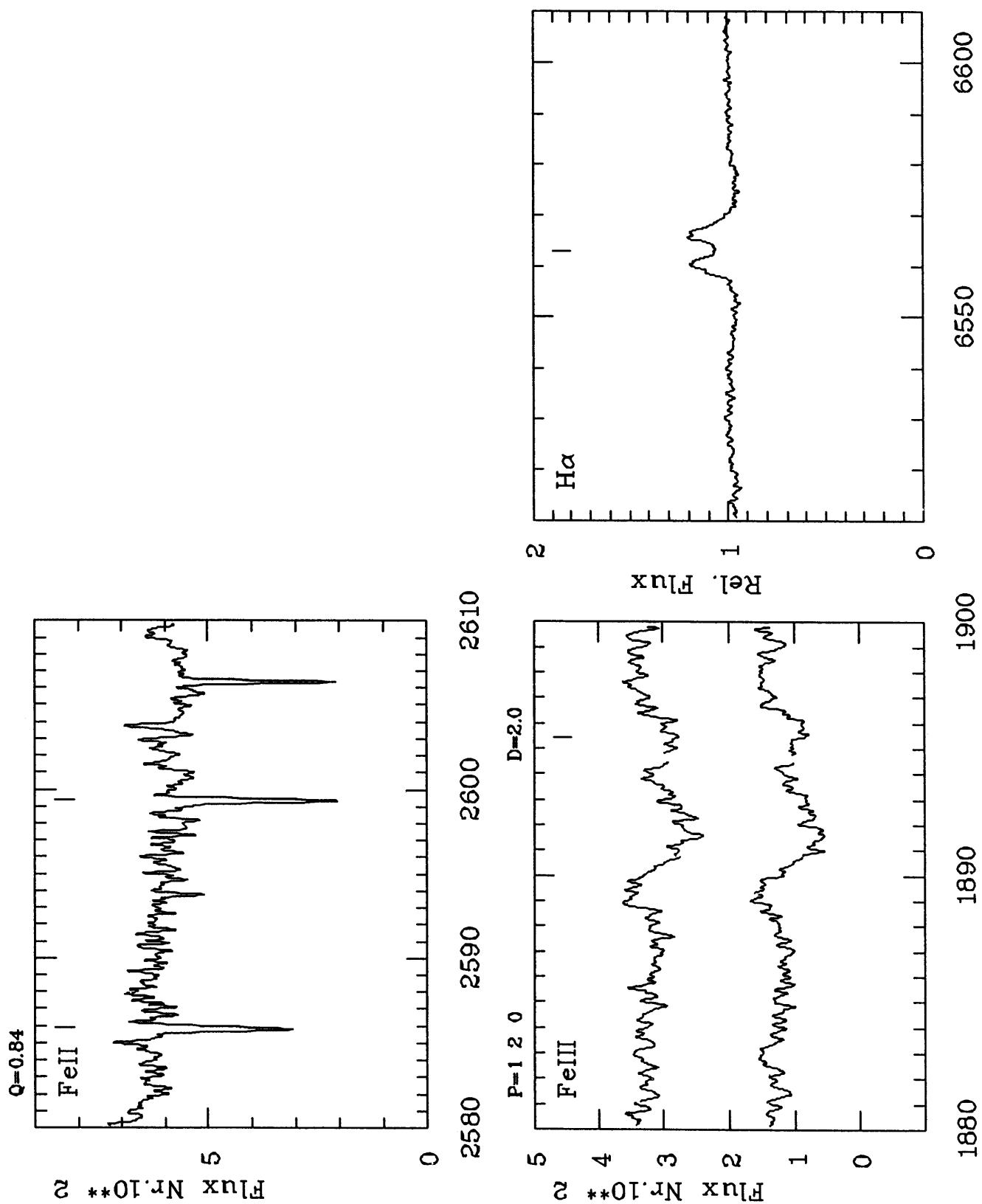
IUE 3 21953 L 84.01.07 - 3 22118 L 84.01.27

IUE 2 02545 S 78.10.06

ESO R G13772 88.04.07

HD 75311 B2.5Ve

vsini 240



IUE 3 21953 L 84.01.07 - 3 22118 L 84.01.27

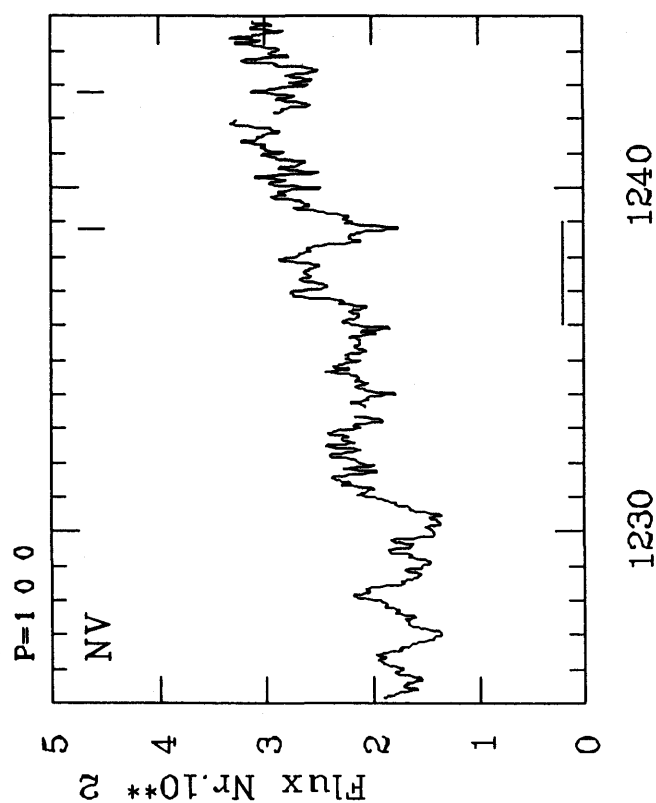
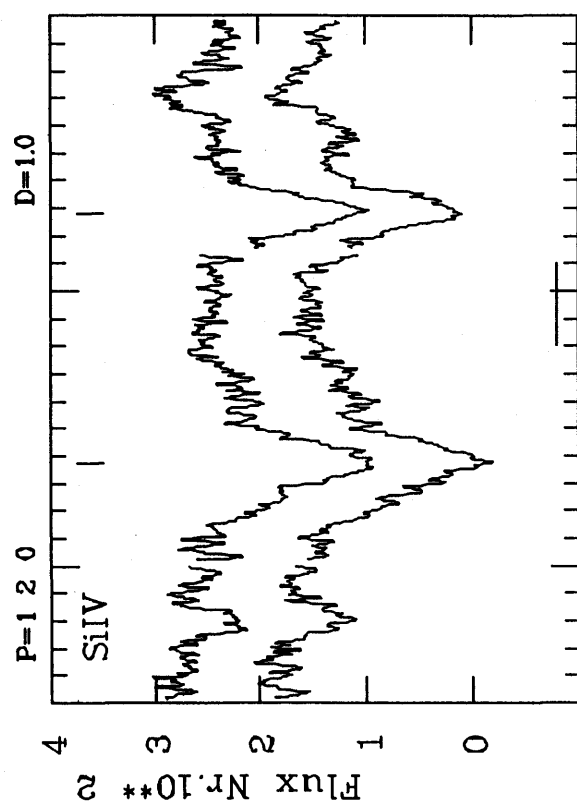
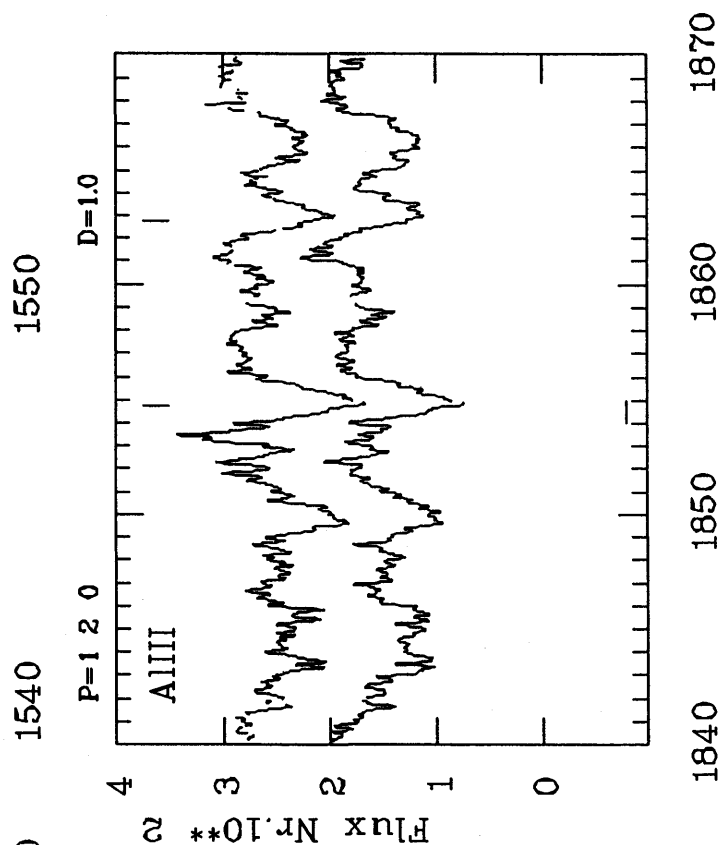
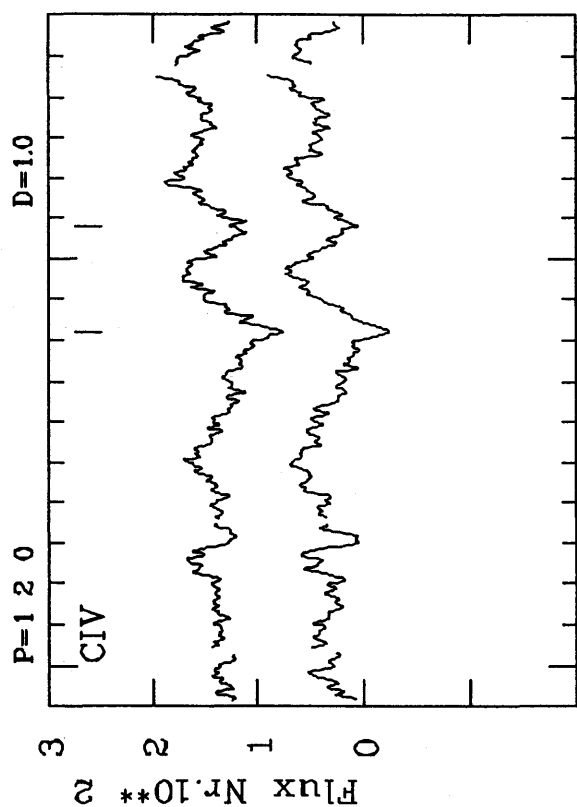
IUE 2 02545 S 78.10.06

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ESO R G13772 88.04.07

HD 78764 B2IVe

vsini 120



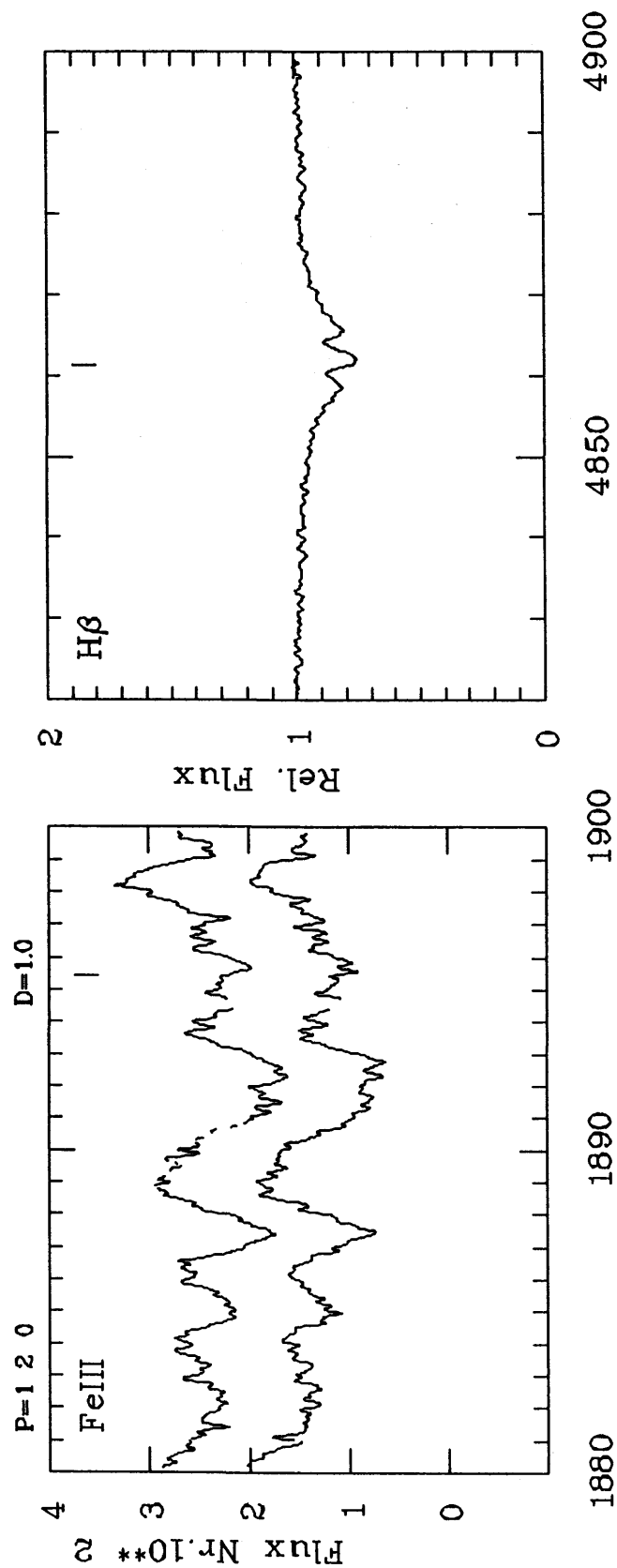
IUE 3 26209 L 85.06.19 - 3 26389 L 85.07.10

ESO B G13842 88.10.25

HD 78764

B2IVe

vsini 120

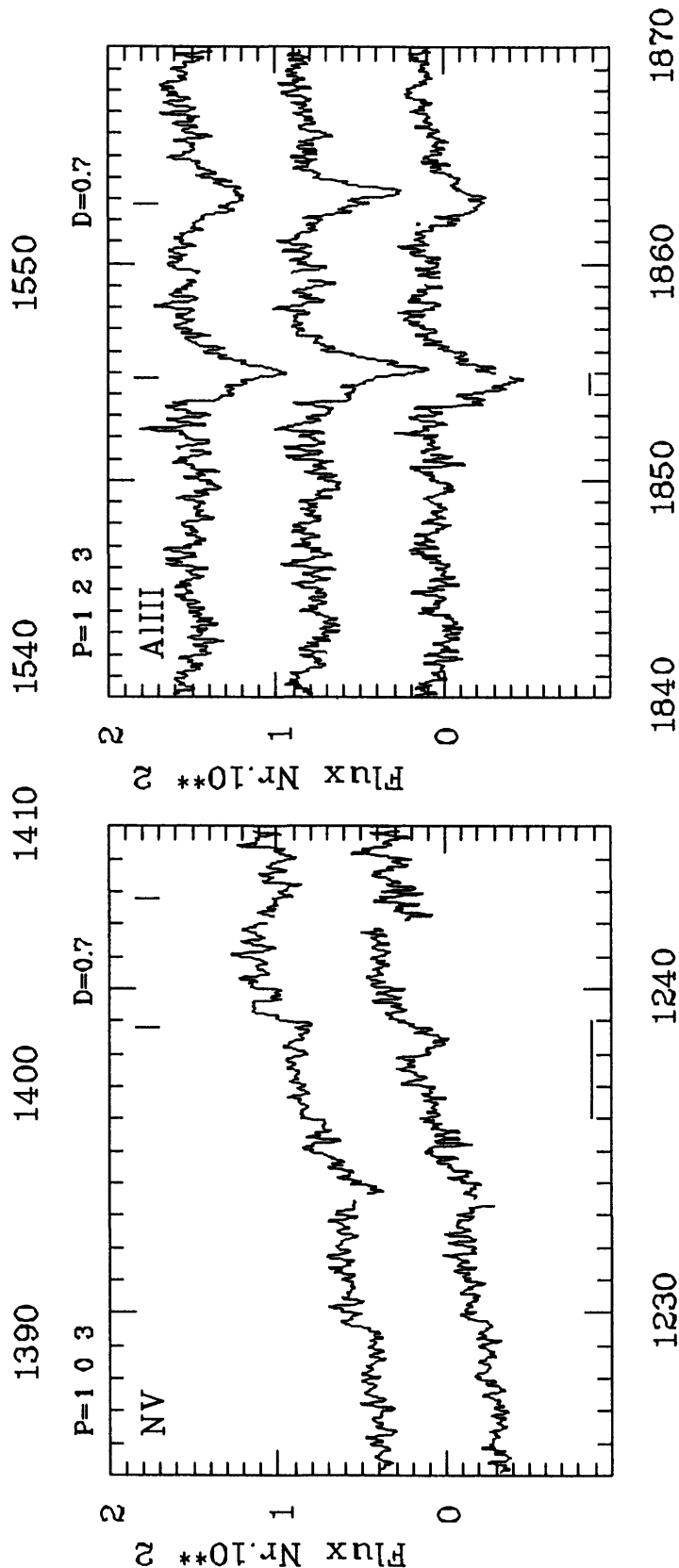
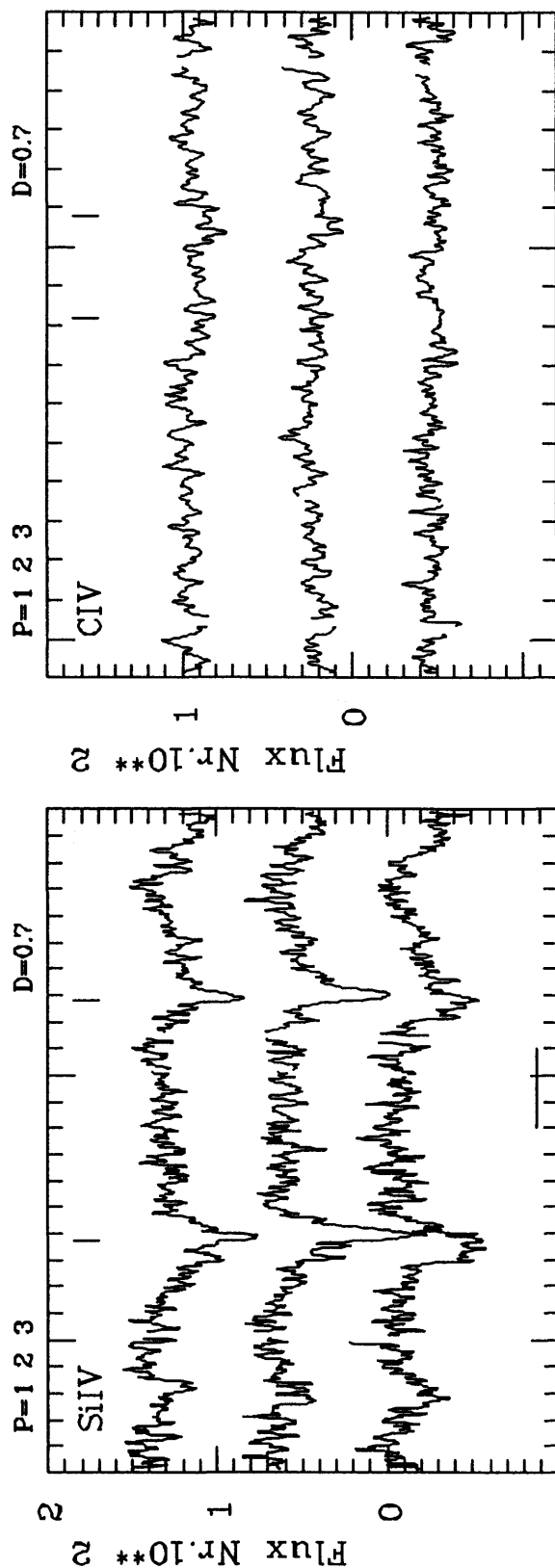


IUE 3 26209 L 85.06.19 - 3 26389 L 85.07.10

ESO B G13842 88.10.25

HD 83953 B5Ve

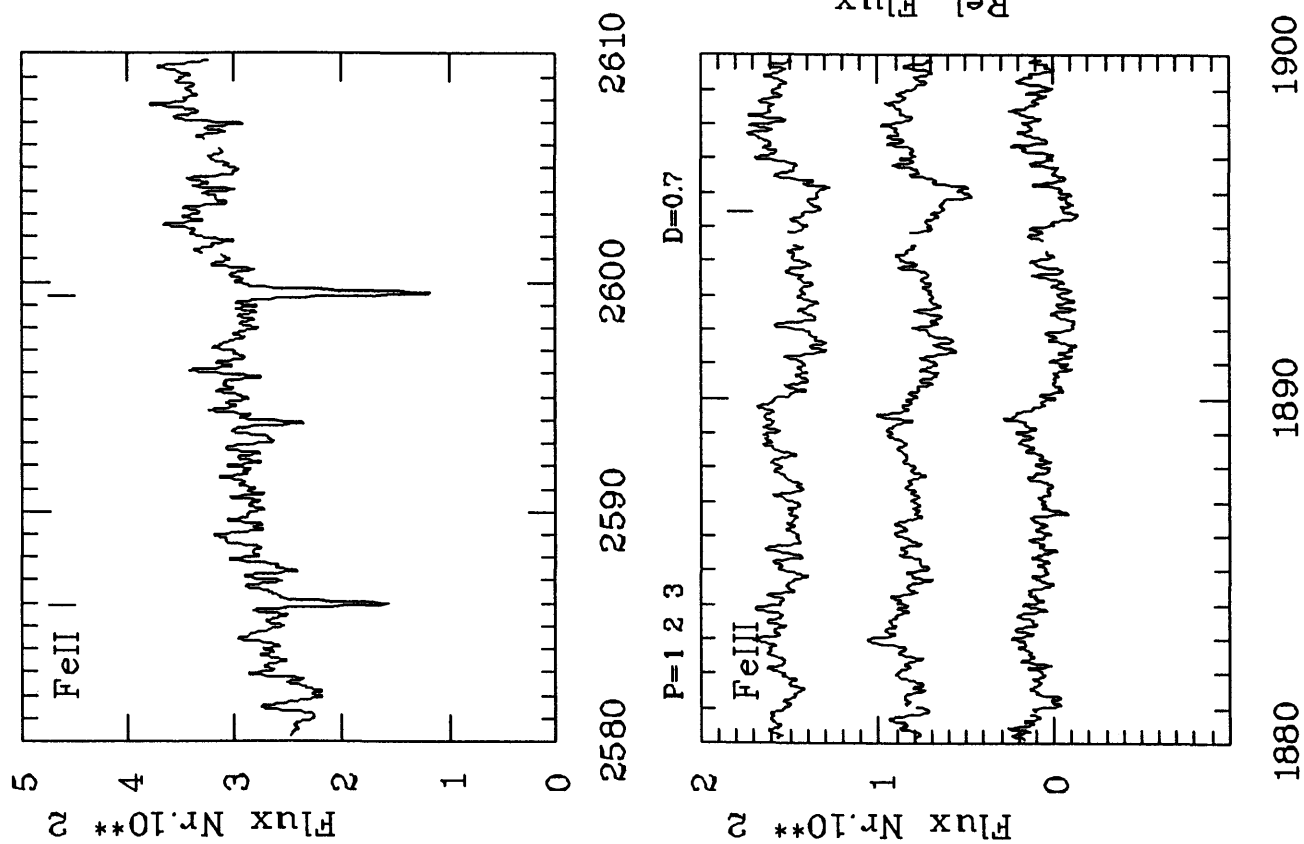
vsini 260



IUE 3 22096 L 84.01.25 - 3 22120 L 84.01.27 - 3 22850 L 84.04.26
 IUE 1 03223 L 84.04.25
 OHP B GB3316 75.03.04

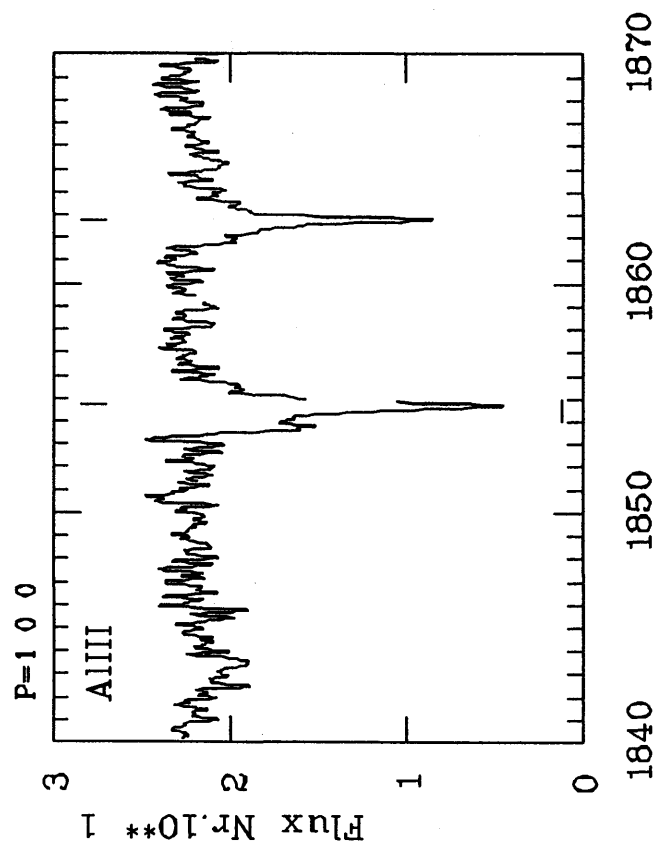
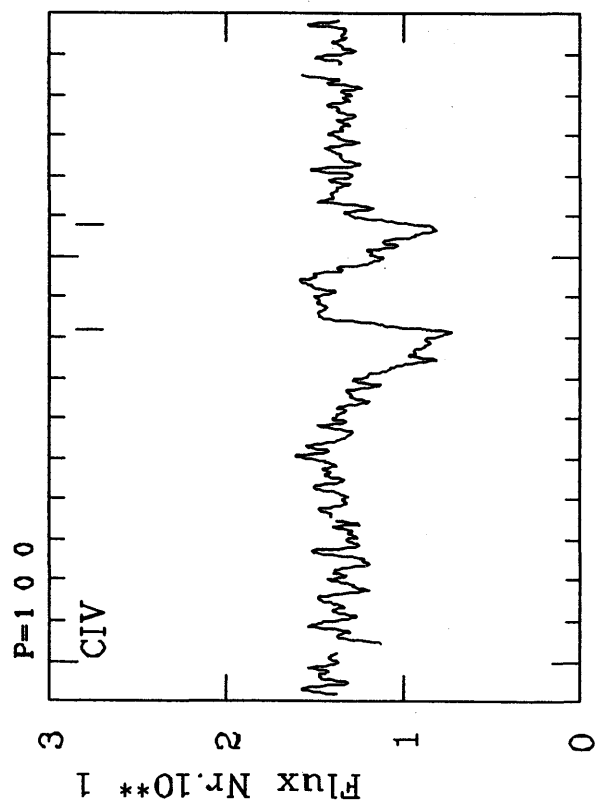
HD 83953 B5Ve

vsini 260



IUE 3 22096 L 84.01.25 - 3 22120 L 84.01.27 - 3 22850 L 84.04.26
 IUE 1 03223 L 84.04.25
 OHP B GB3316 75.03.04

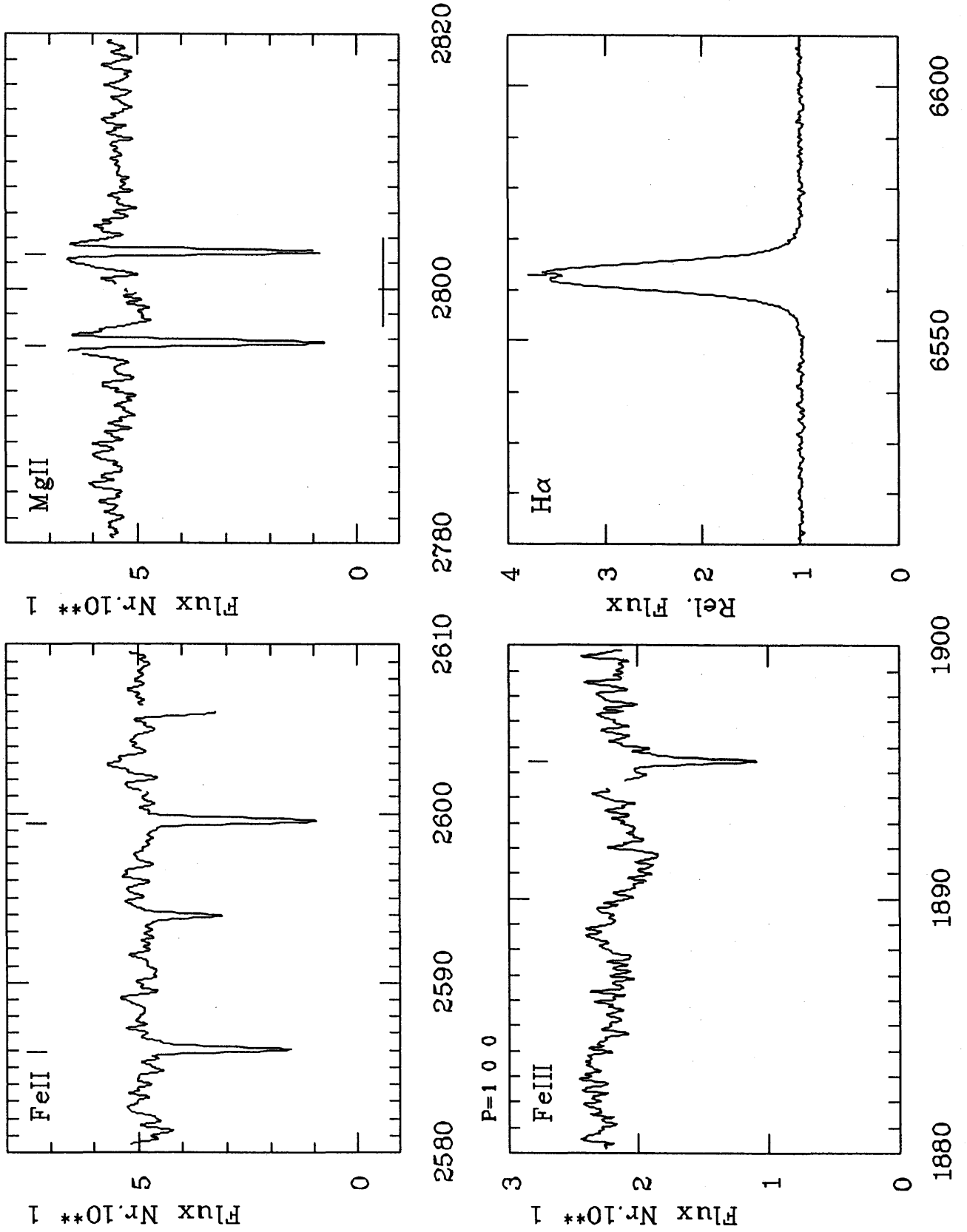
HD 87543 B7IVne



IUE 3 31230 L 87.06.22
 IUE 1 11064 L 87.06.22

ESO R F9264 88.04.09

HD 87543 B7IVne

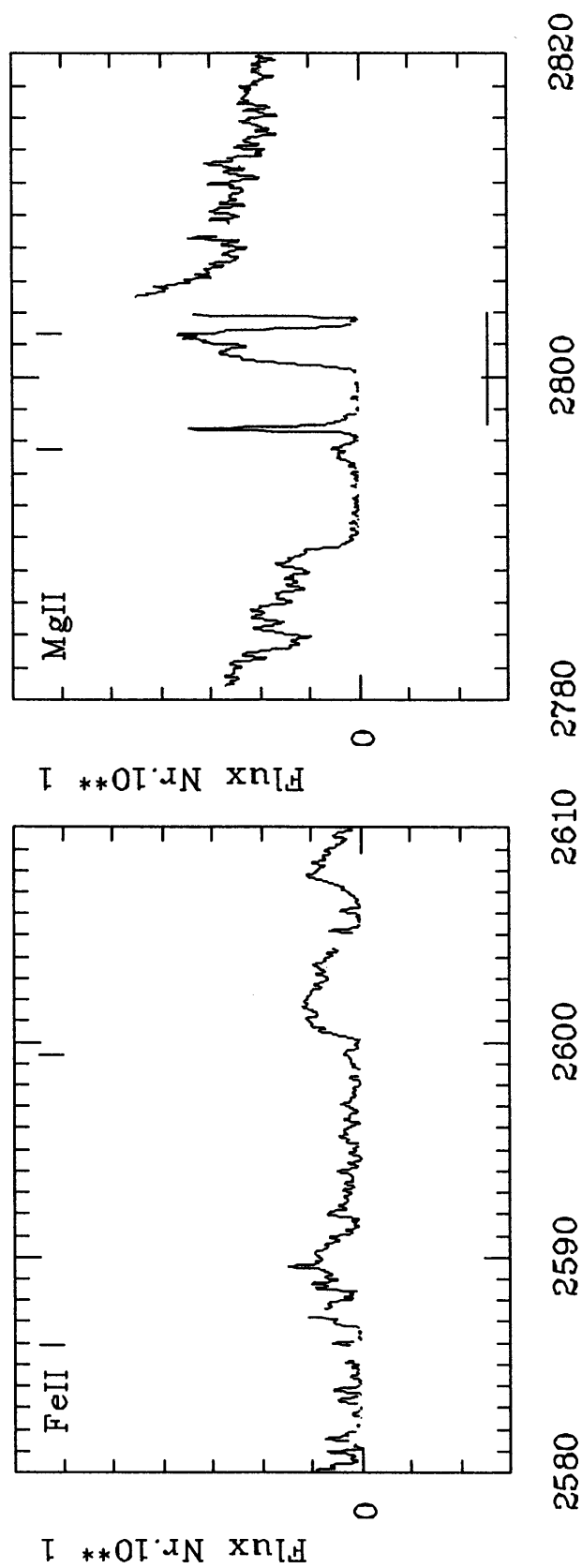


IUE 3 31230 L 87.06.22
IUE 1 11064 L 87.06.22

ESO R F9264 88.04.09

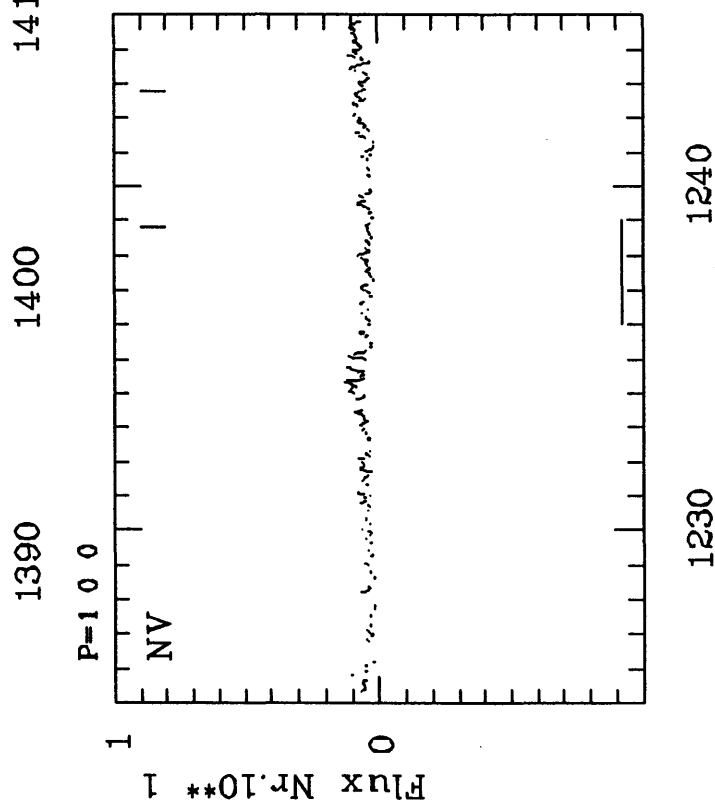
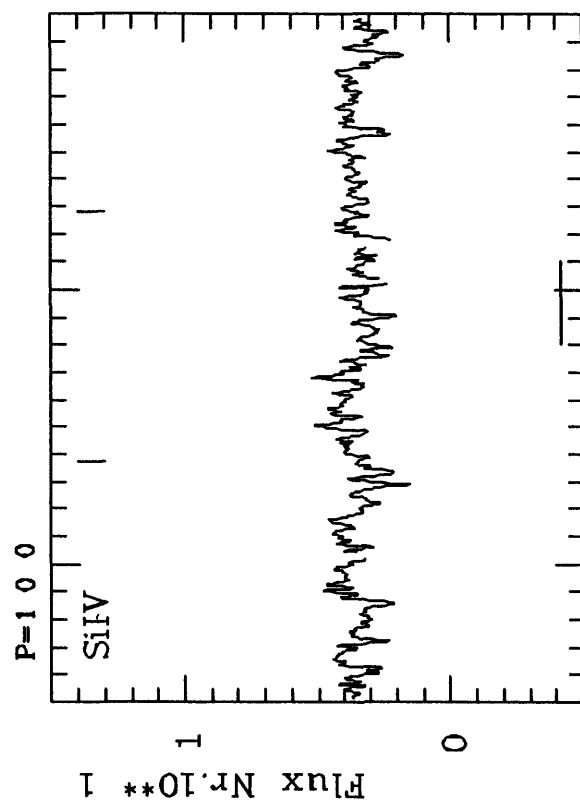
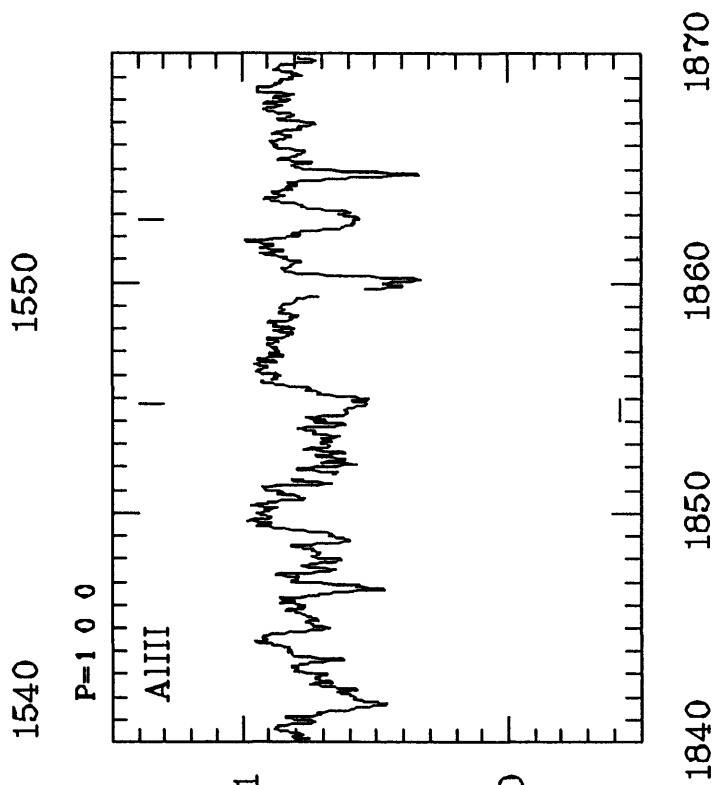
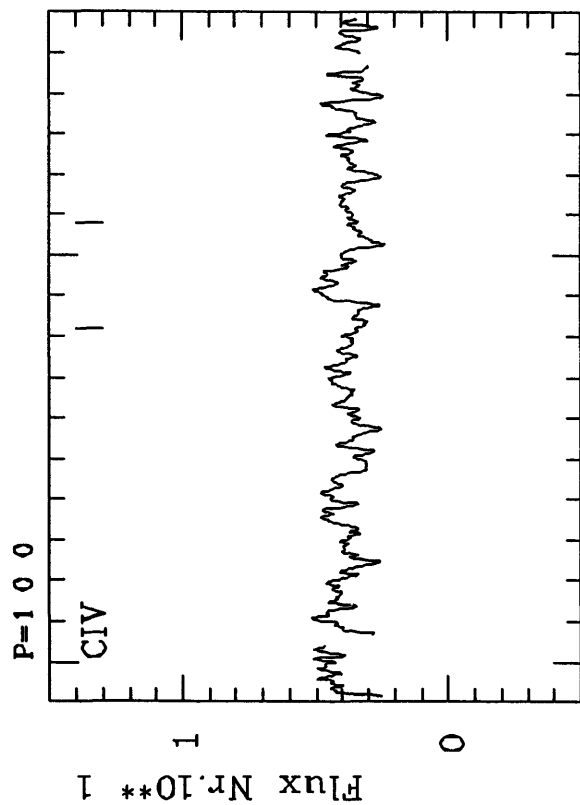


HD 87643 B2e

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- IUE 2 10393 L 81.04.20
-

HD 88195 A1Vsh

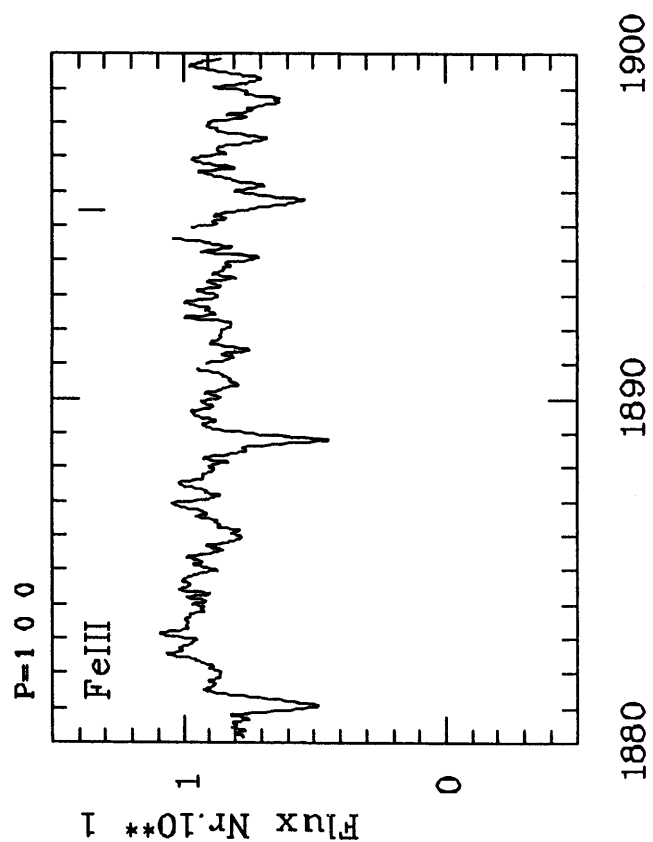
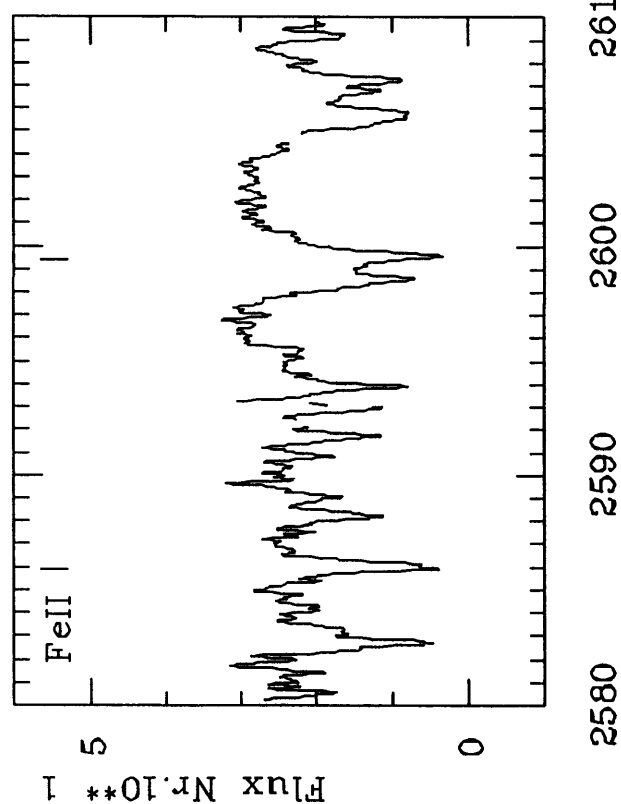
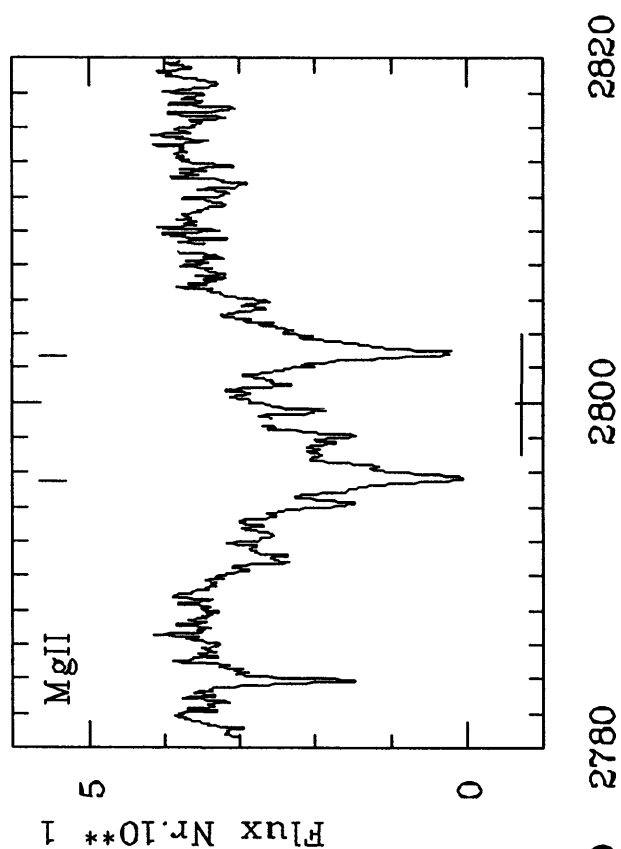
vsini 100



IUE 3 18819 L 82.12.19
 IUE 2 14847 L 82.12.19

HD 88195 A1Vsh

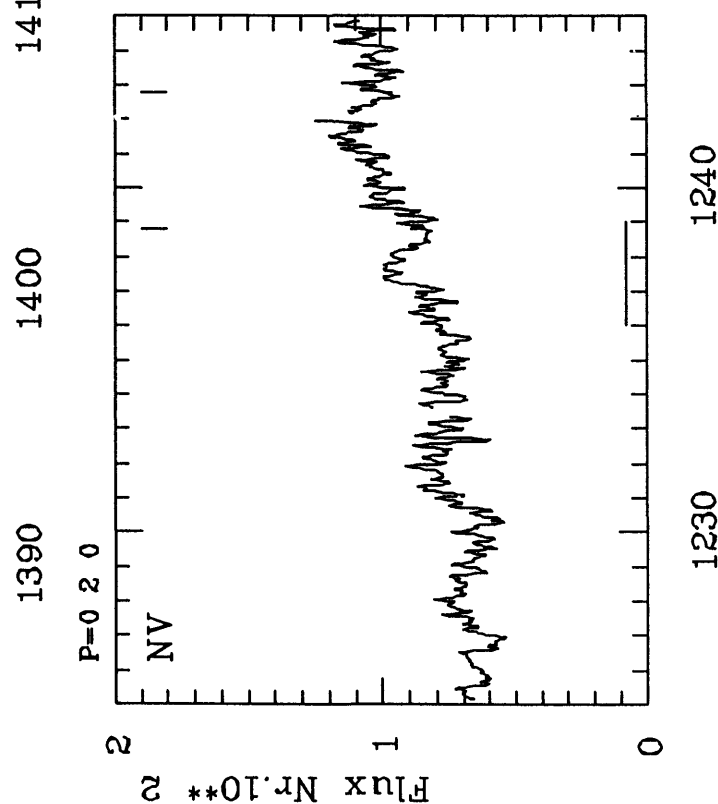
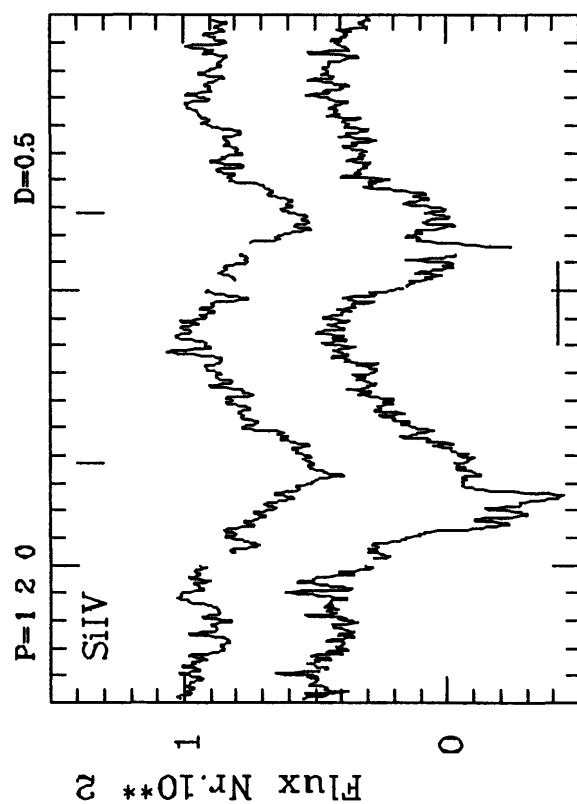
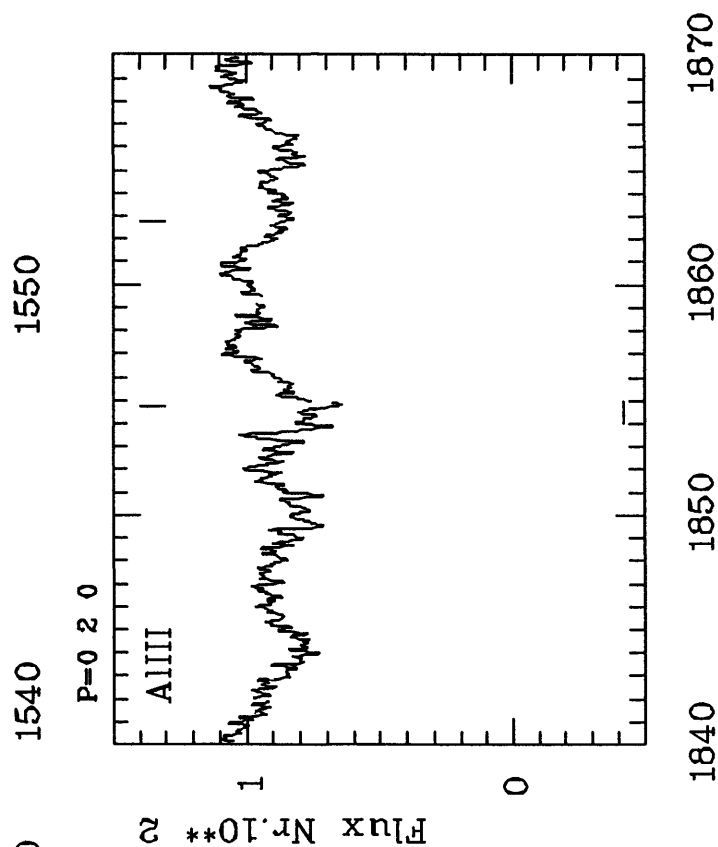
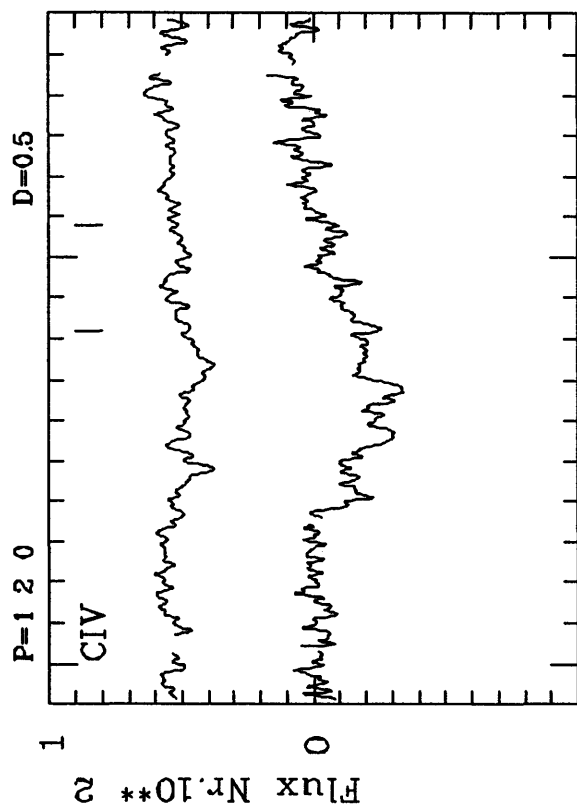
vsini 100



IUE 3 18819 L 82.12.19
 IUE 2 14847 L 82.12.19

HD 88661 B2IVe

vsini 220



IUE 3 07749 L 80.01.23 - 3 20991 L 83.09.09

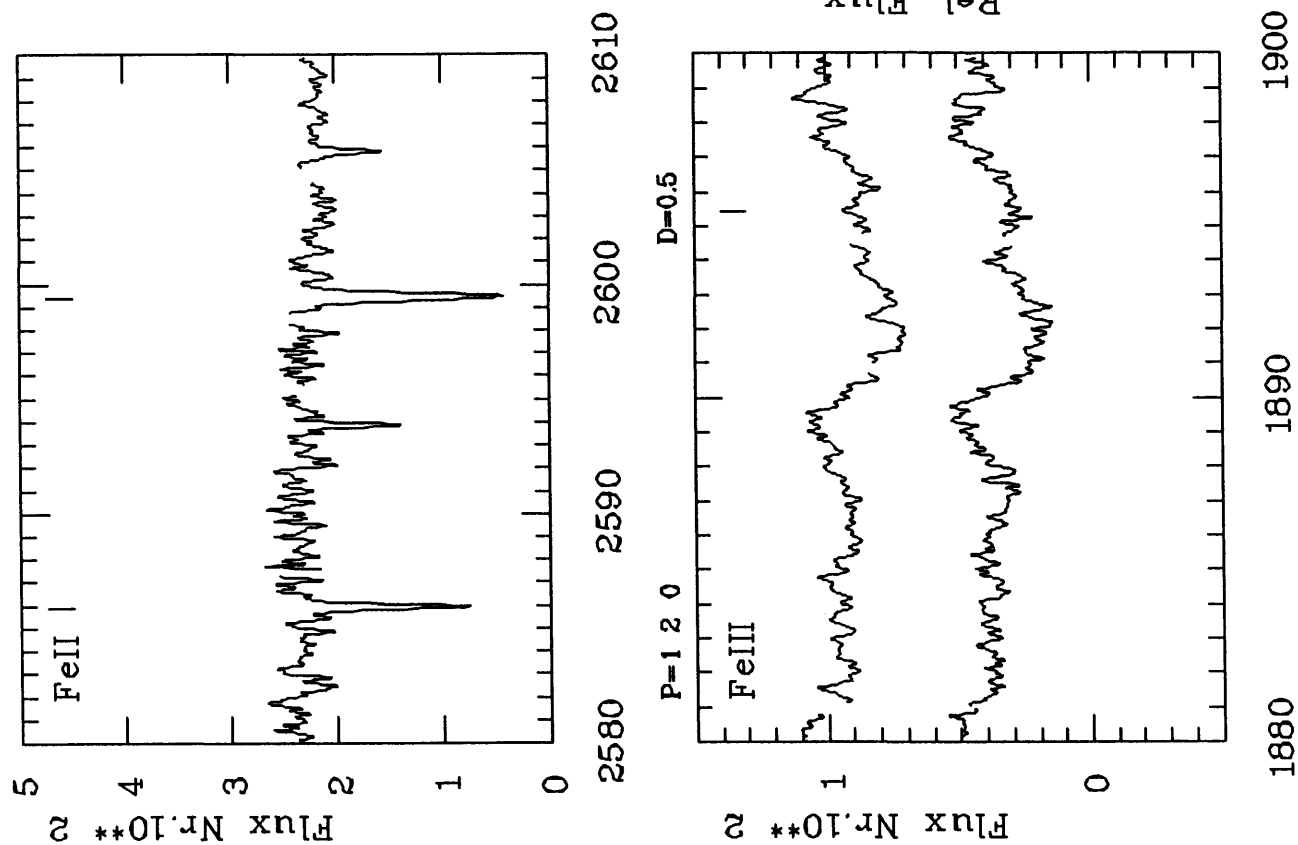
IUE 2 06741 L 80.01.23

ESO R F9265

88.04.09

HD 88661 B2IVe

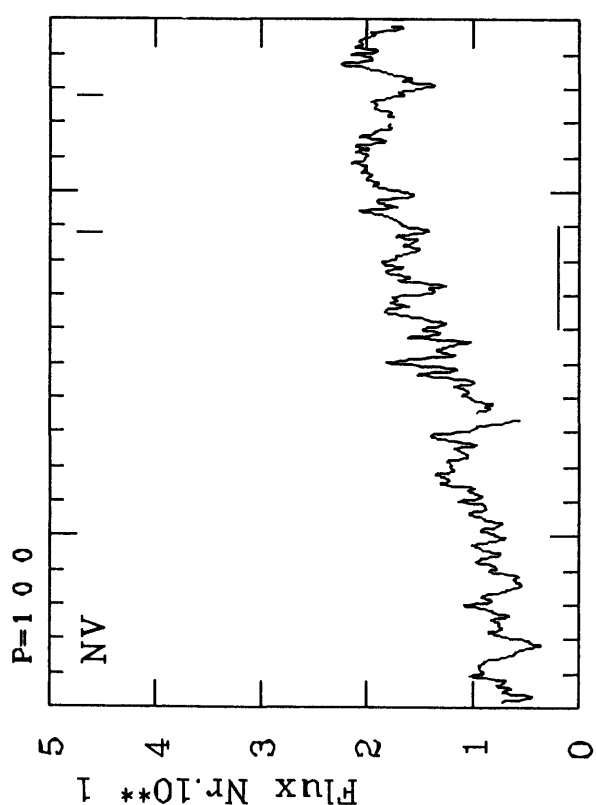
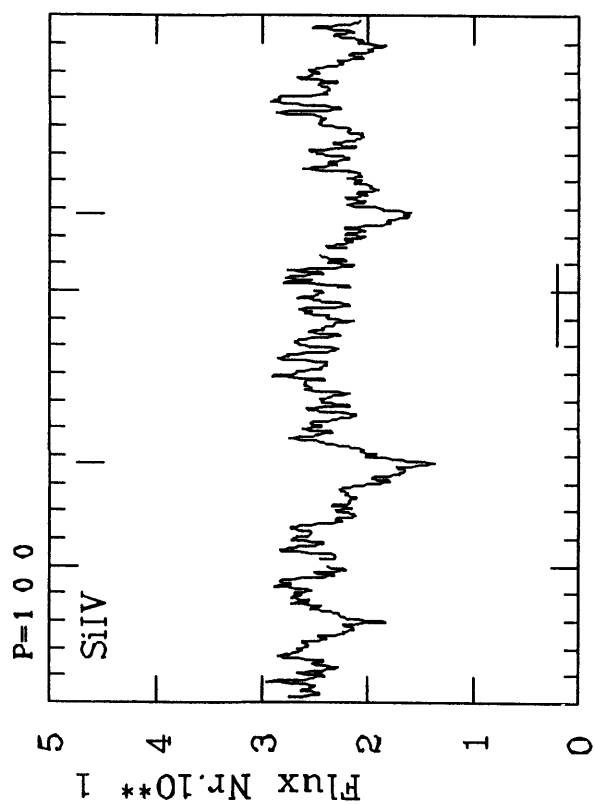
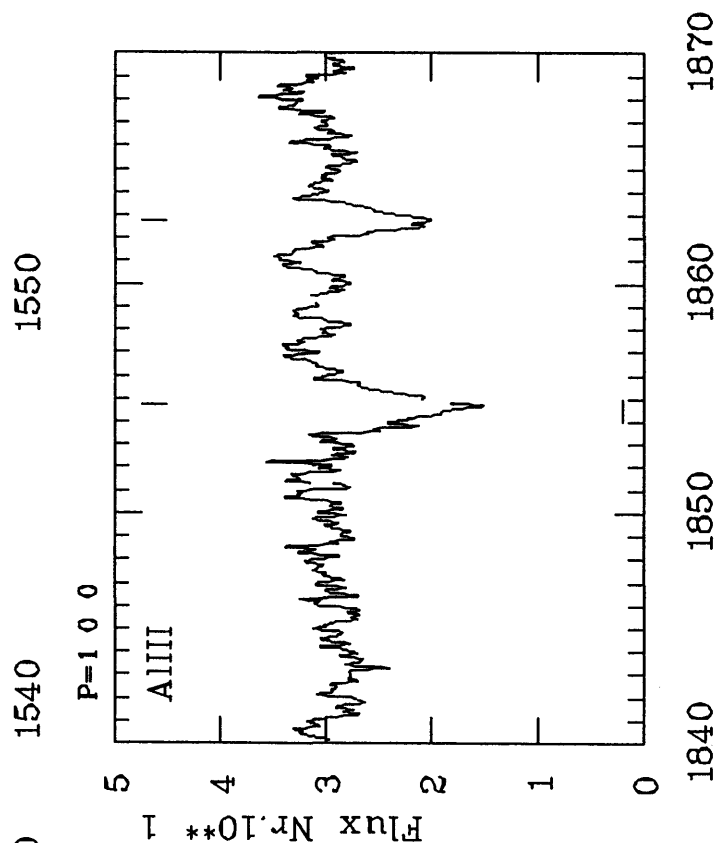
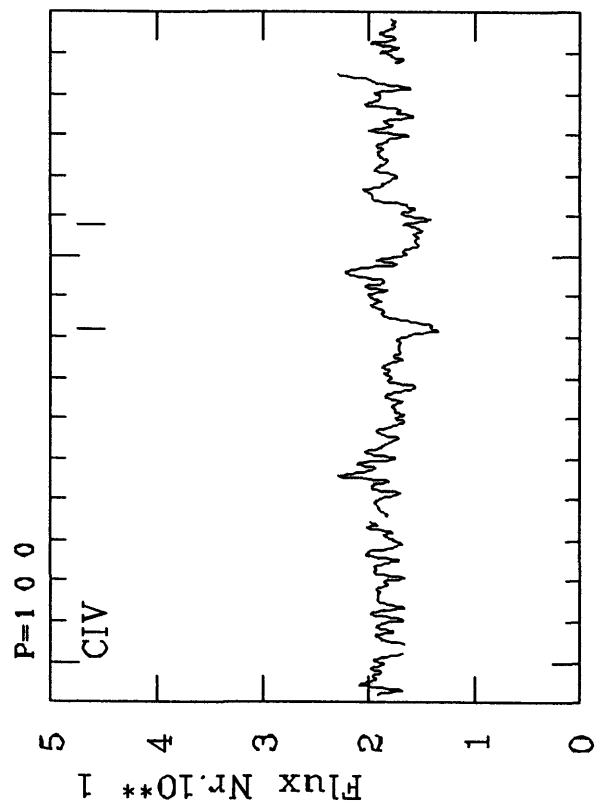
vsini 220



IUE 3 07749 L 80.01.23 - 3 20991 L 83.09.09
 IUE 2 06741 L 80.01.23

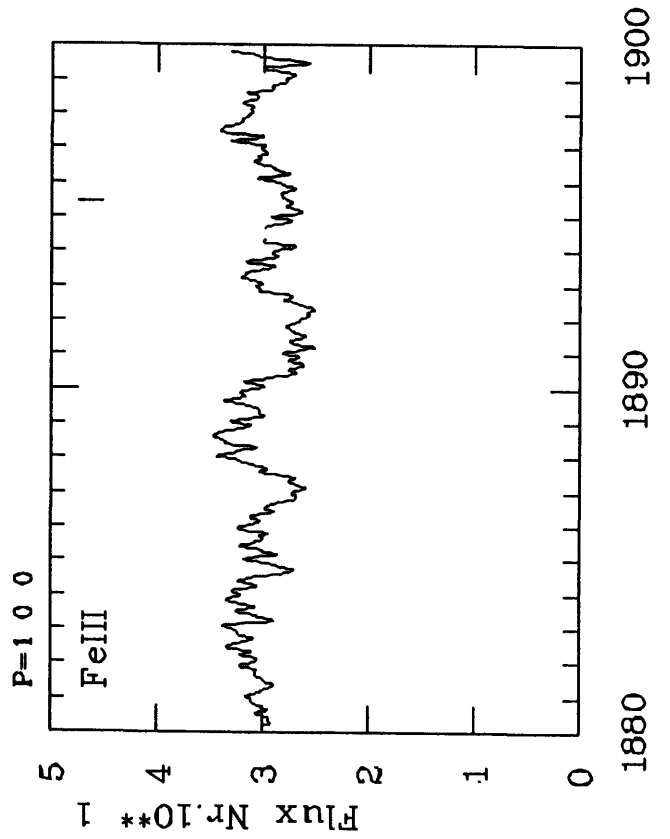
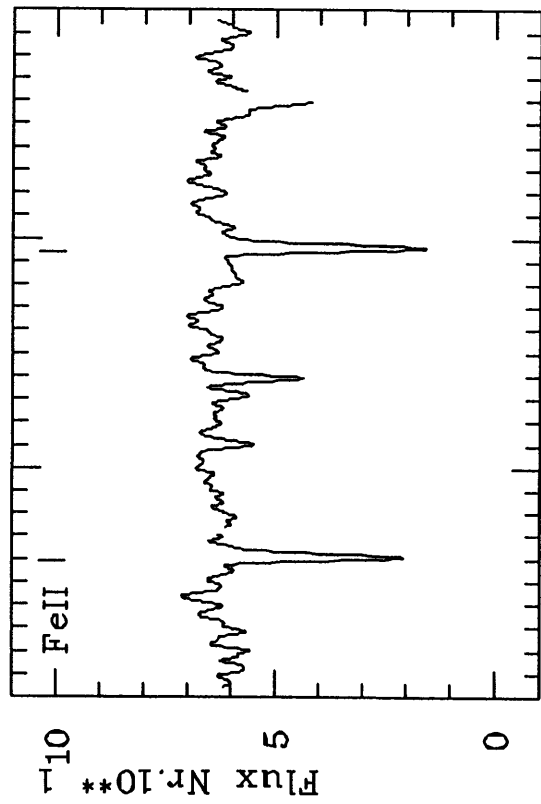
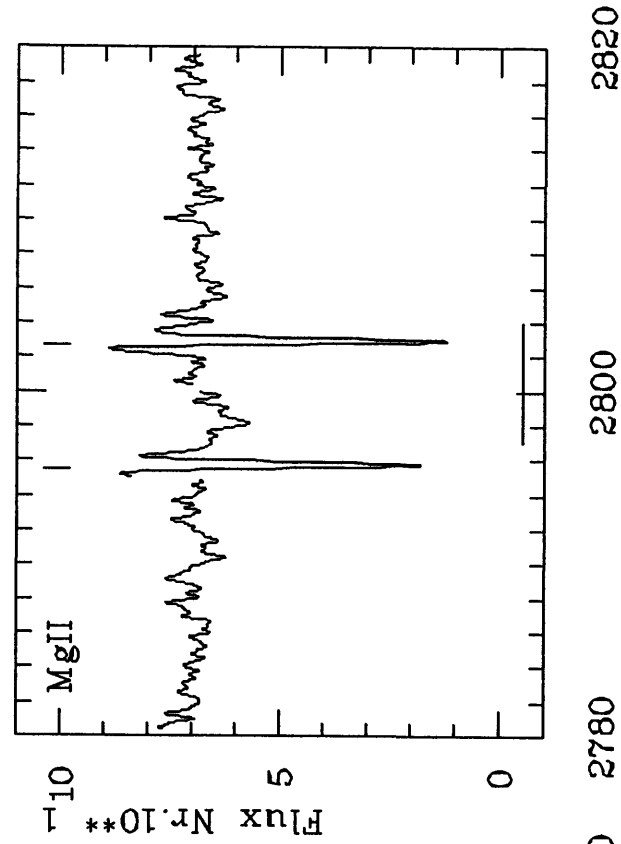
ESO R F9265 88.04.09

HD 88825 B4Ve



IUE 3 31231 L 87.06.22
 IUE 1 11065 L 87.06.22

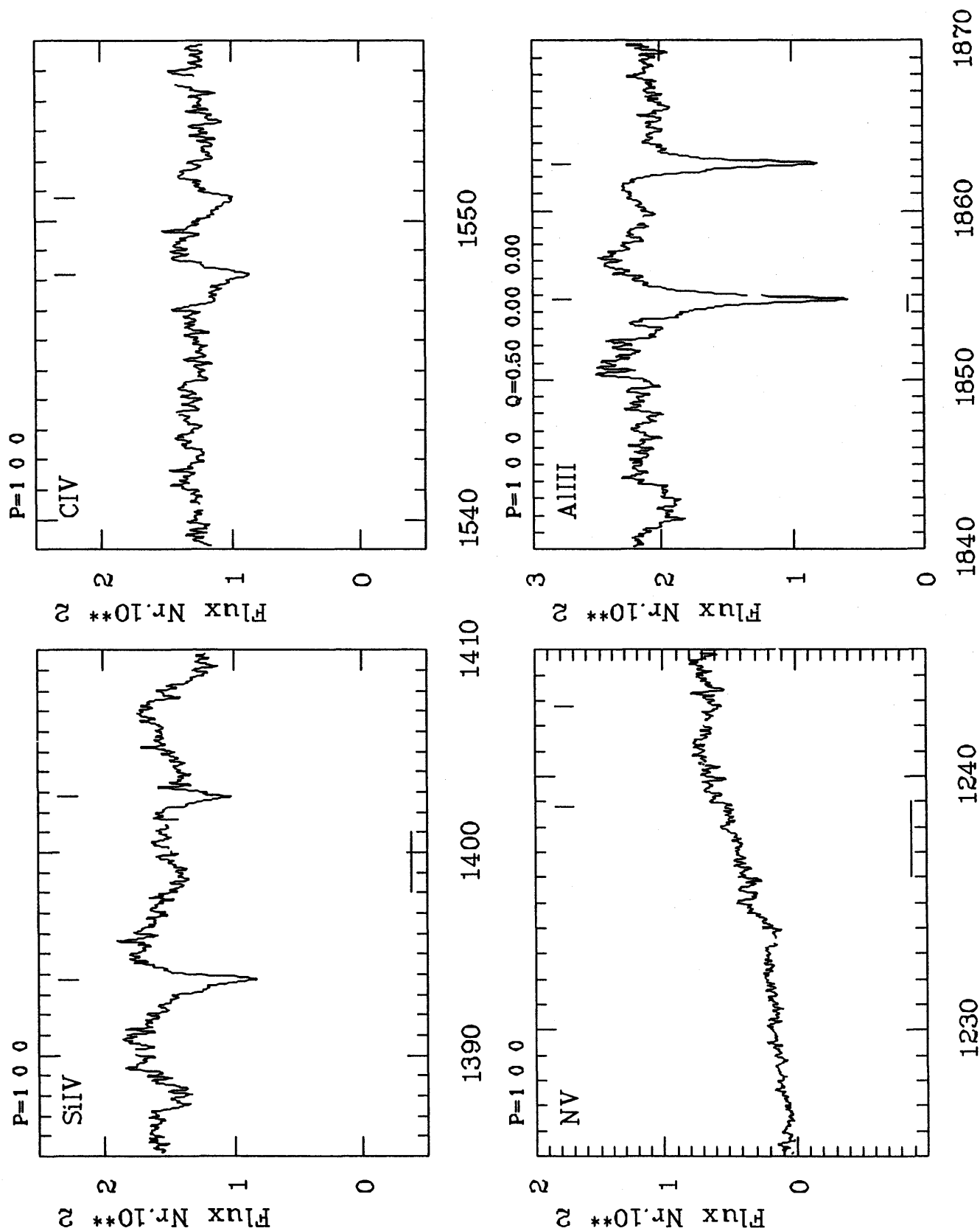
HD 88825 B4Ve



IUE 3 31231 L 87.06.22
IUE 1 11065 L 87.06.22

HD 89080 B8IIIesh

vsini 220



IUE 3 26121 L 85.06.08

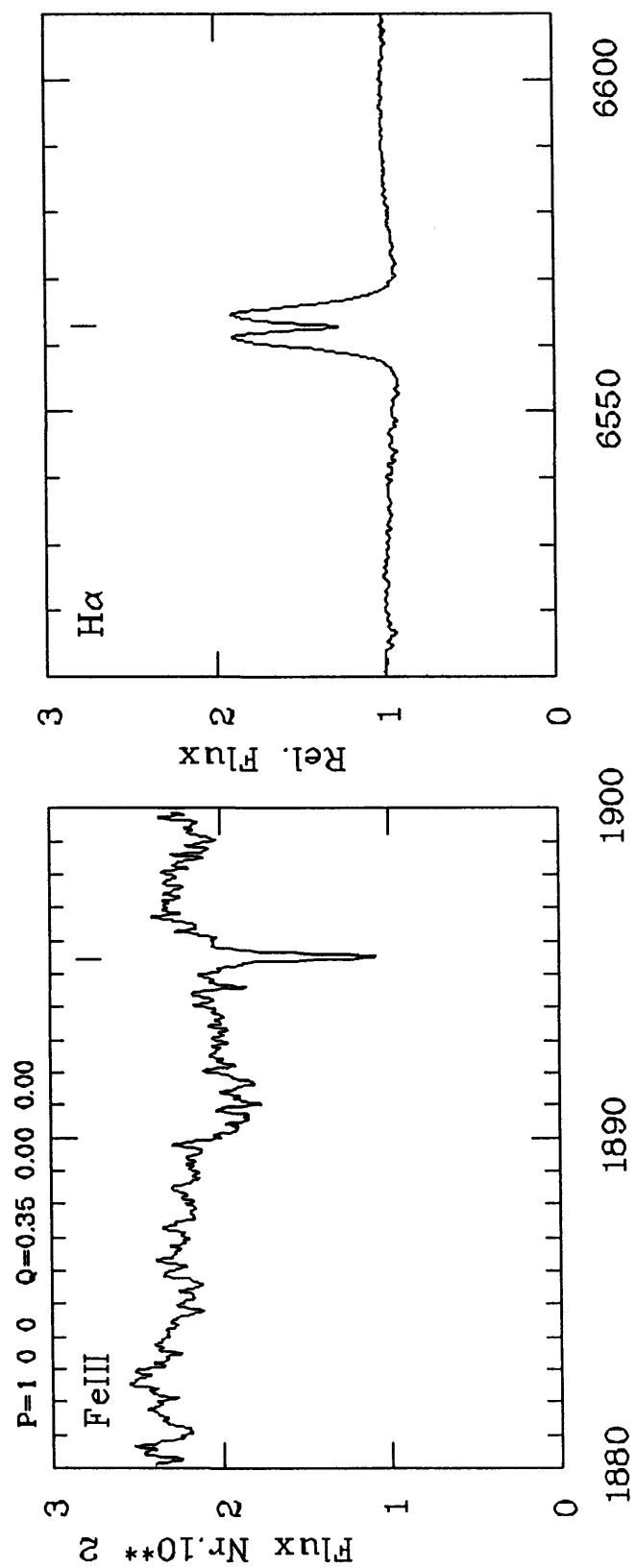
ESO R G13773

88.04.07

HD 89080

B8IIIesh

vsini 220



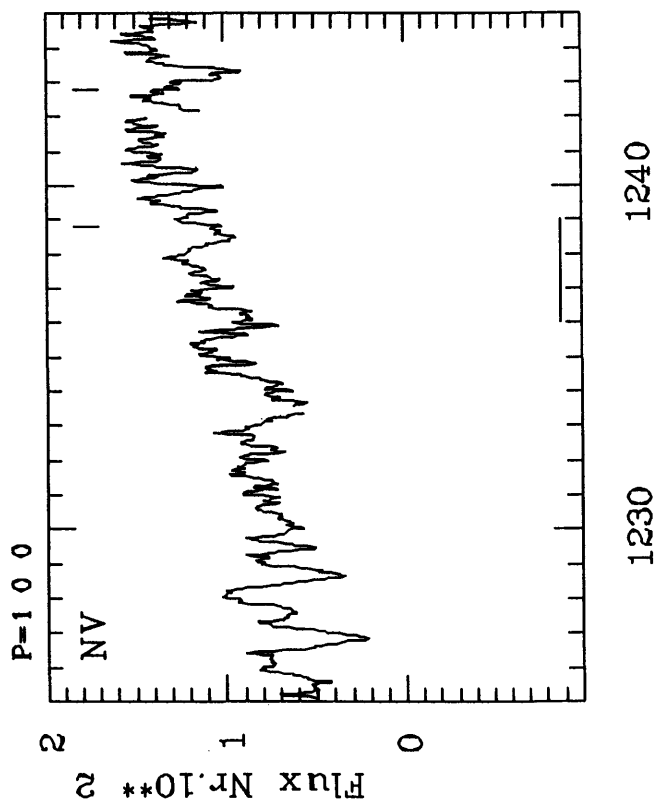
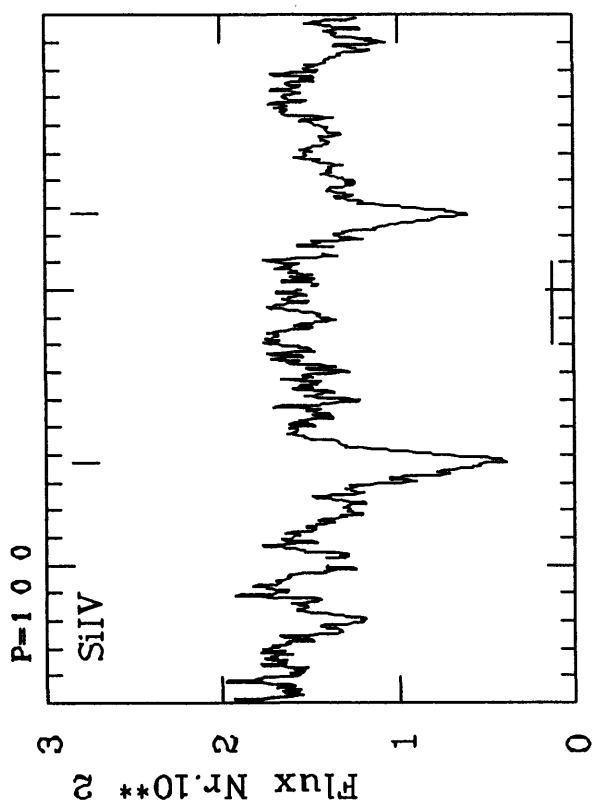
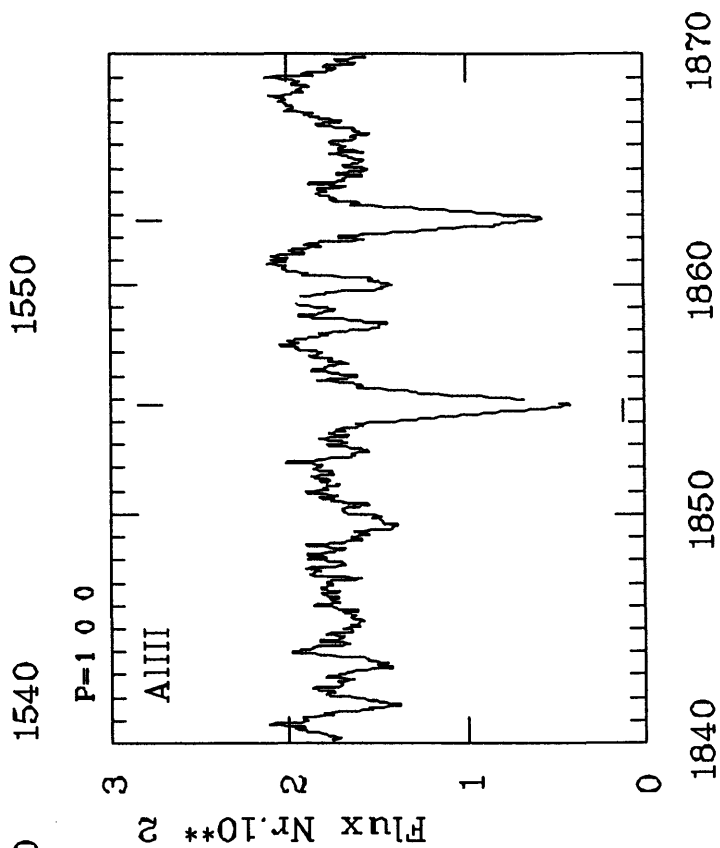
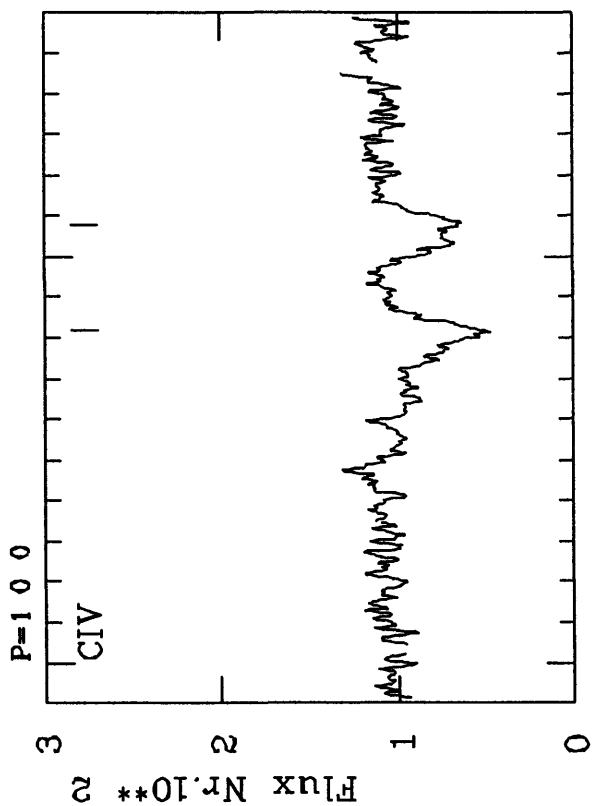
IUE 3 26121 L 85.06.08

ESO R G13773

88.04.07

HD 89890 B3IIIep

vsini 70



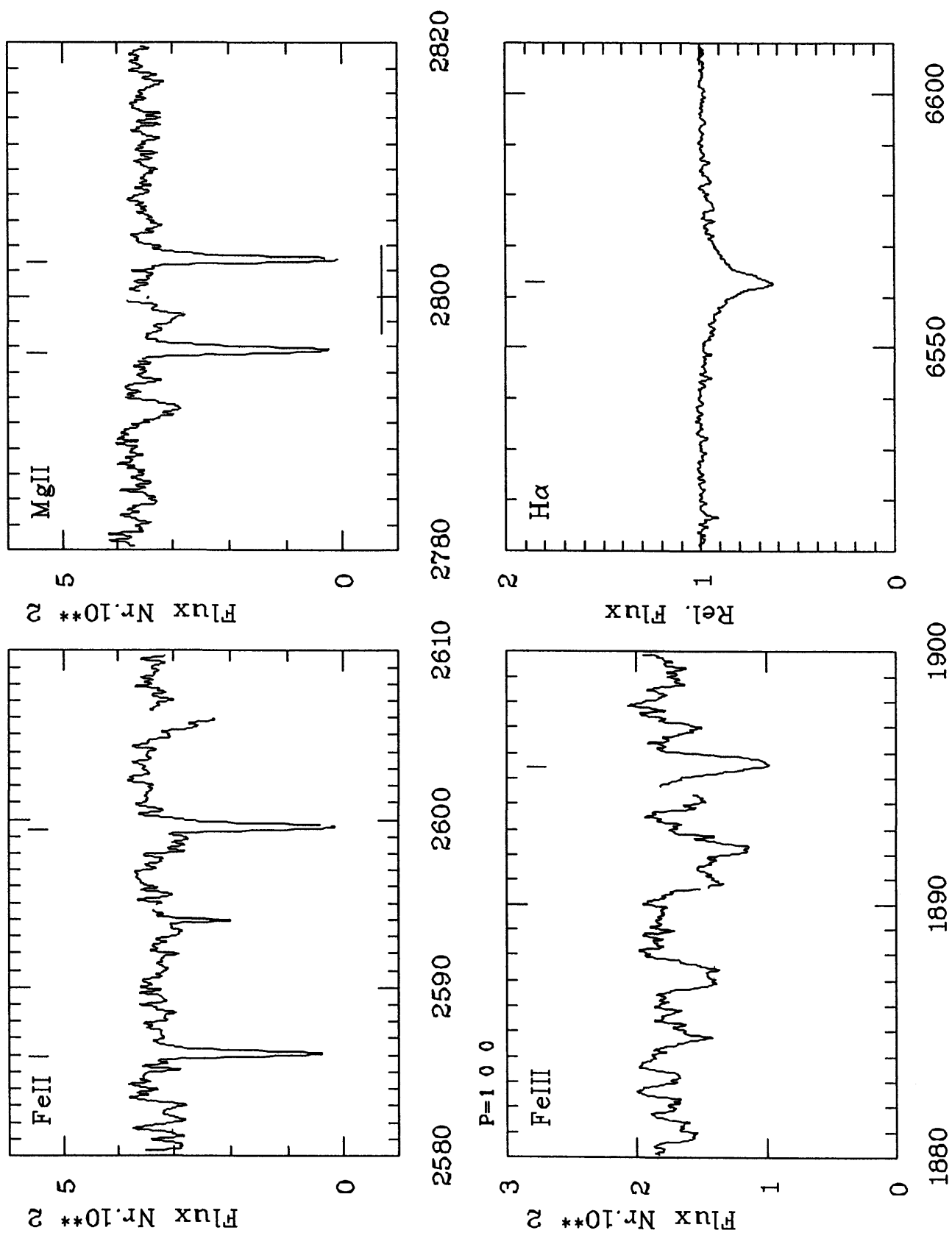
IUE 3 31229 L 87.06.22

IUE 1 11063 L 87.06.22

ESO R G13757 88.04.05

HD 89890 B3IIIep

vsini 70



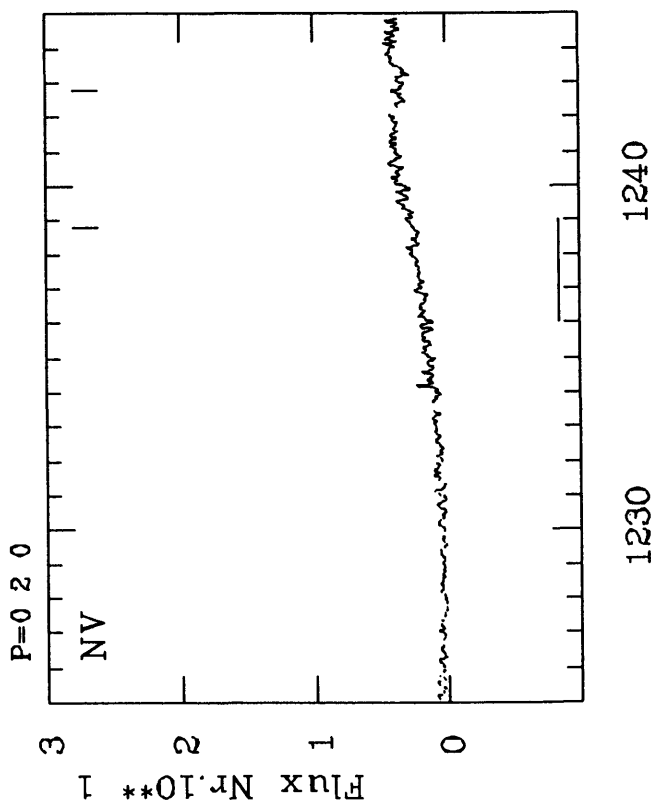
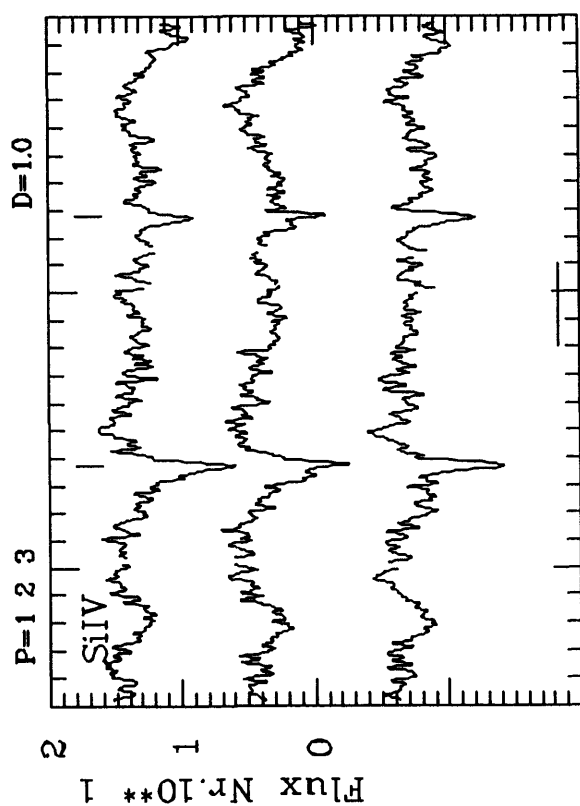
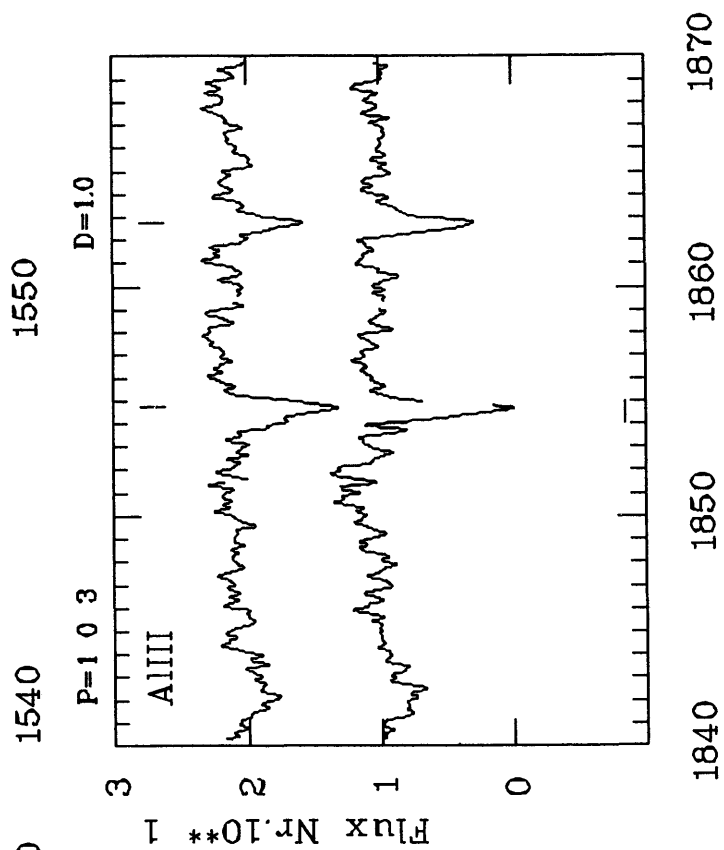
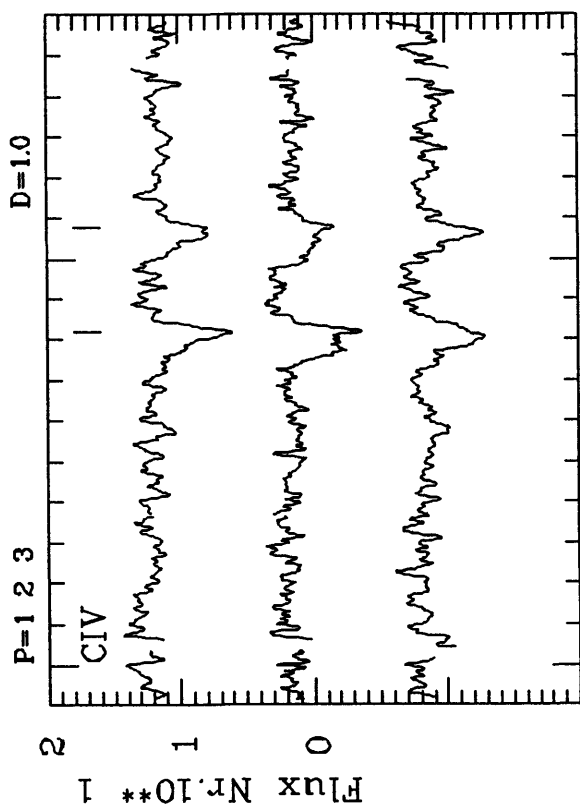
IUE 3 31229 L 87.06.22

IUE 1 11063 L 87.06.22

ESO R G13757 88.04.05

HD 91120 B9IVe

vsini 250

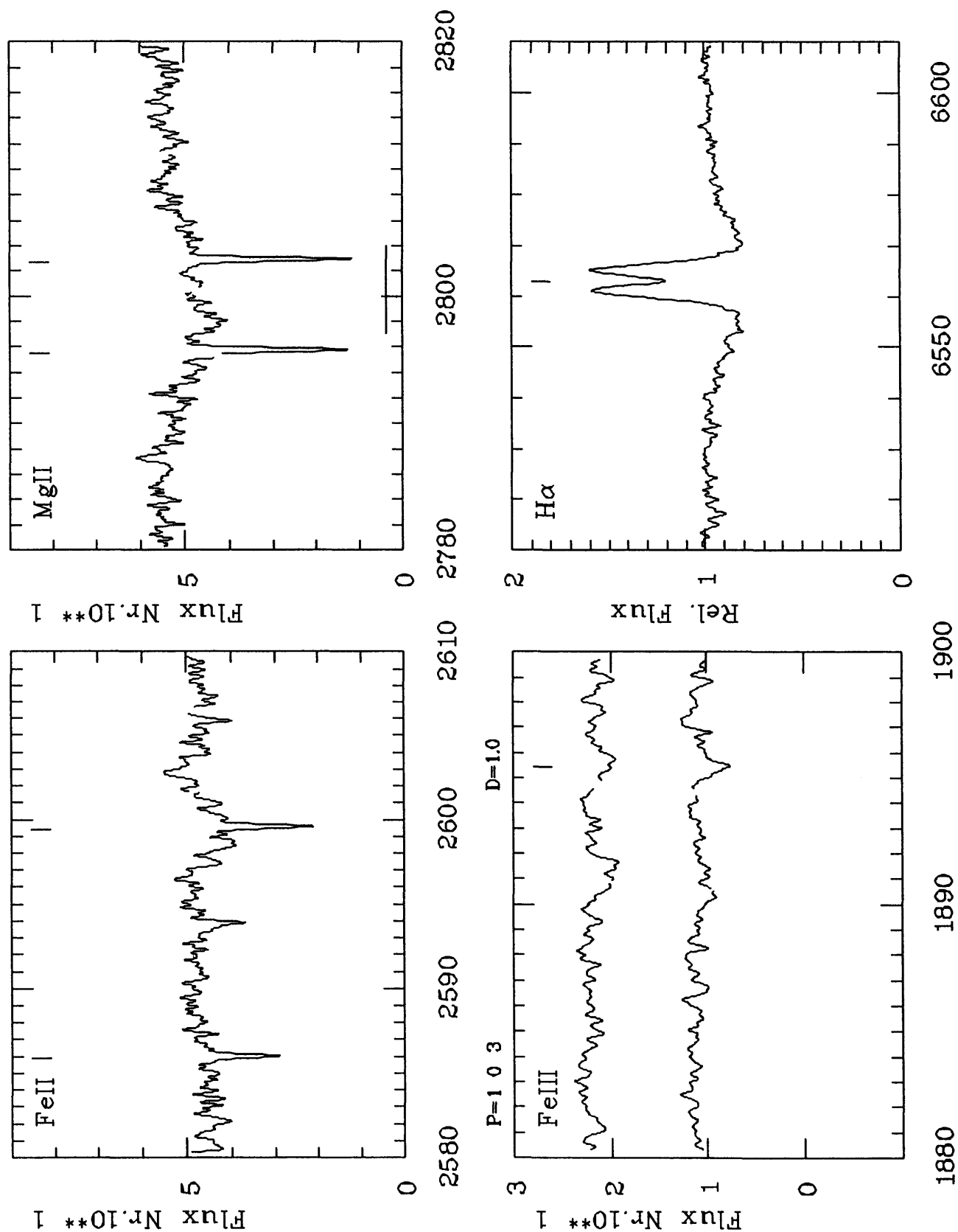


IUE 3 21916 L 83.12.30 - 3 27507 L 86.01.11 - 3 30911 L 87.05.04
 IUE 1 07475 L 86.01.11

OHP R GA5706 84.01.06

HD 91120 B9IVe

vsini 250

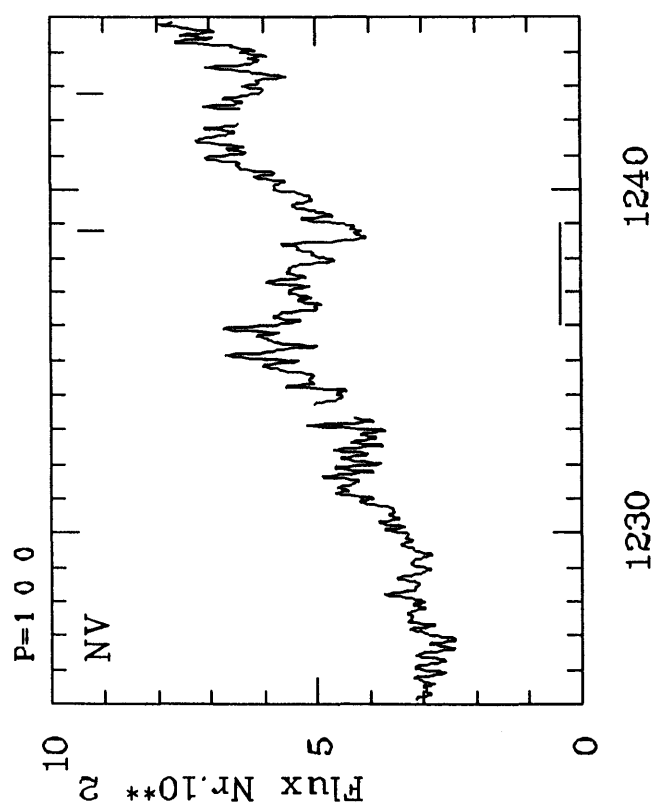
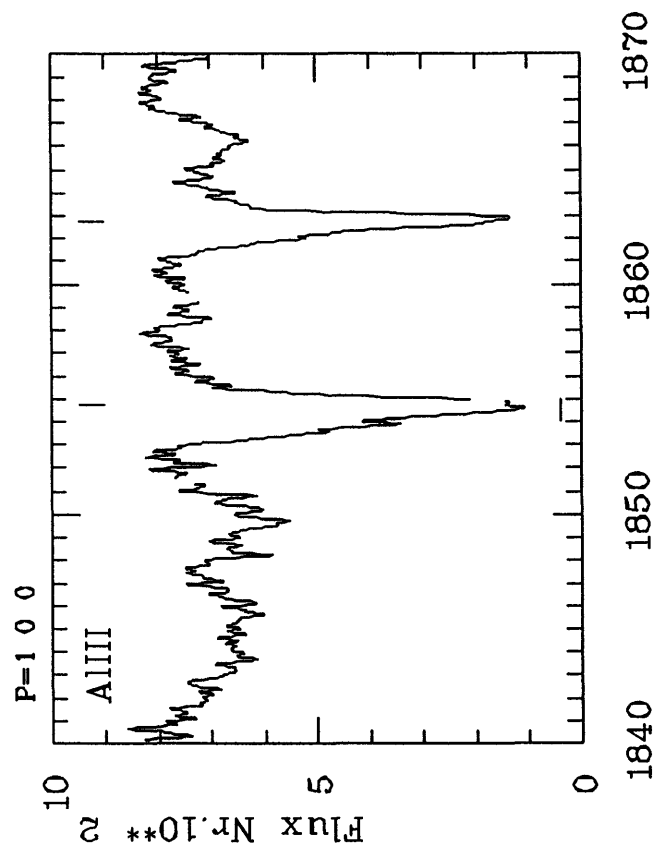
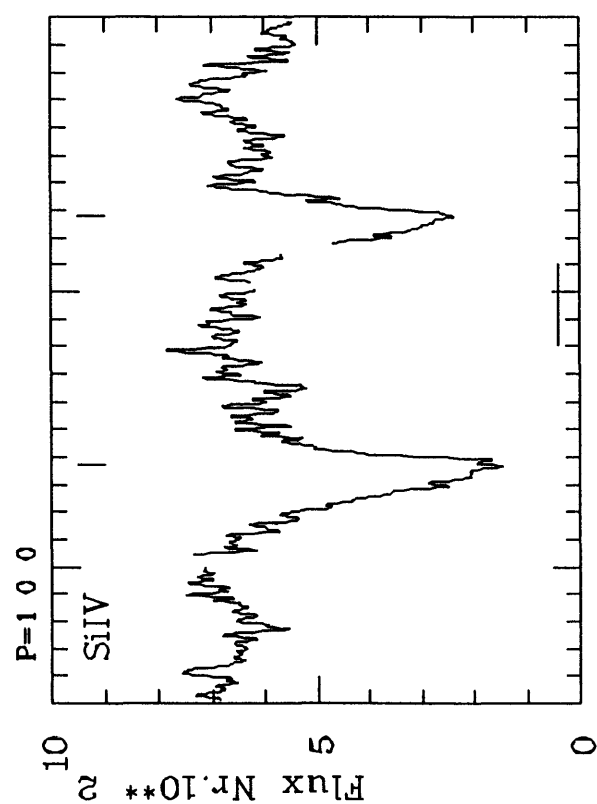
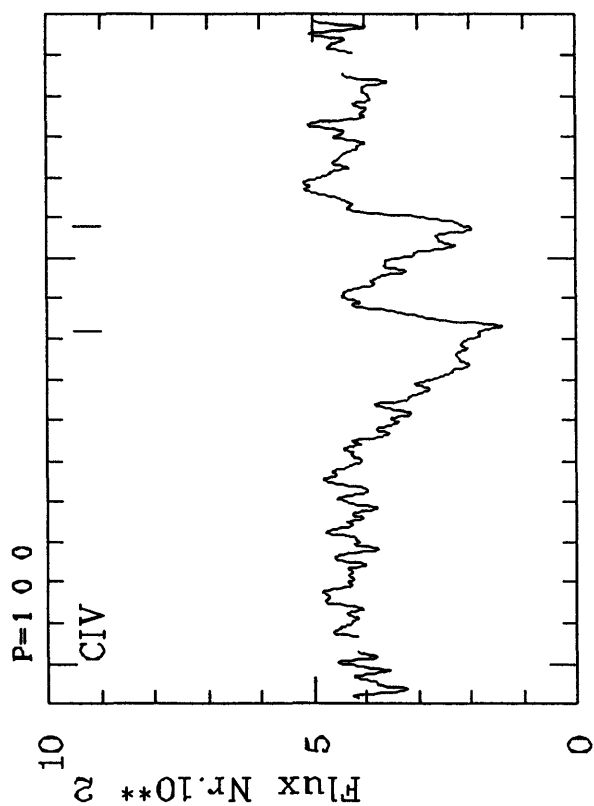


IUE 3 21916 L 83.12.30 - 3 27507 L 86.01.11 - 3 30911 L 87.05.04
 IUE 1 07475 L 86.01.11

OHP R GA5706 84.01.06

HD 91465 B4Ve

vsini 250



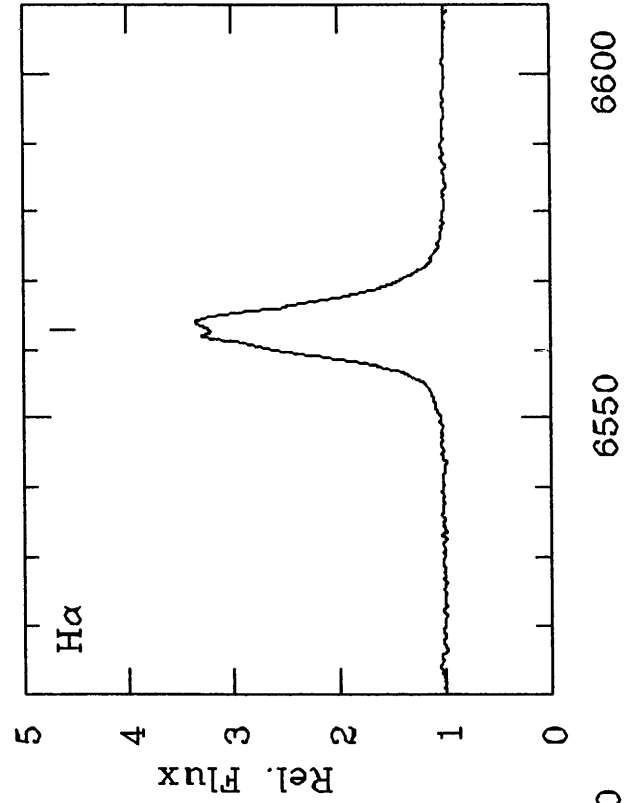
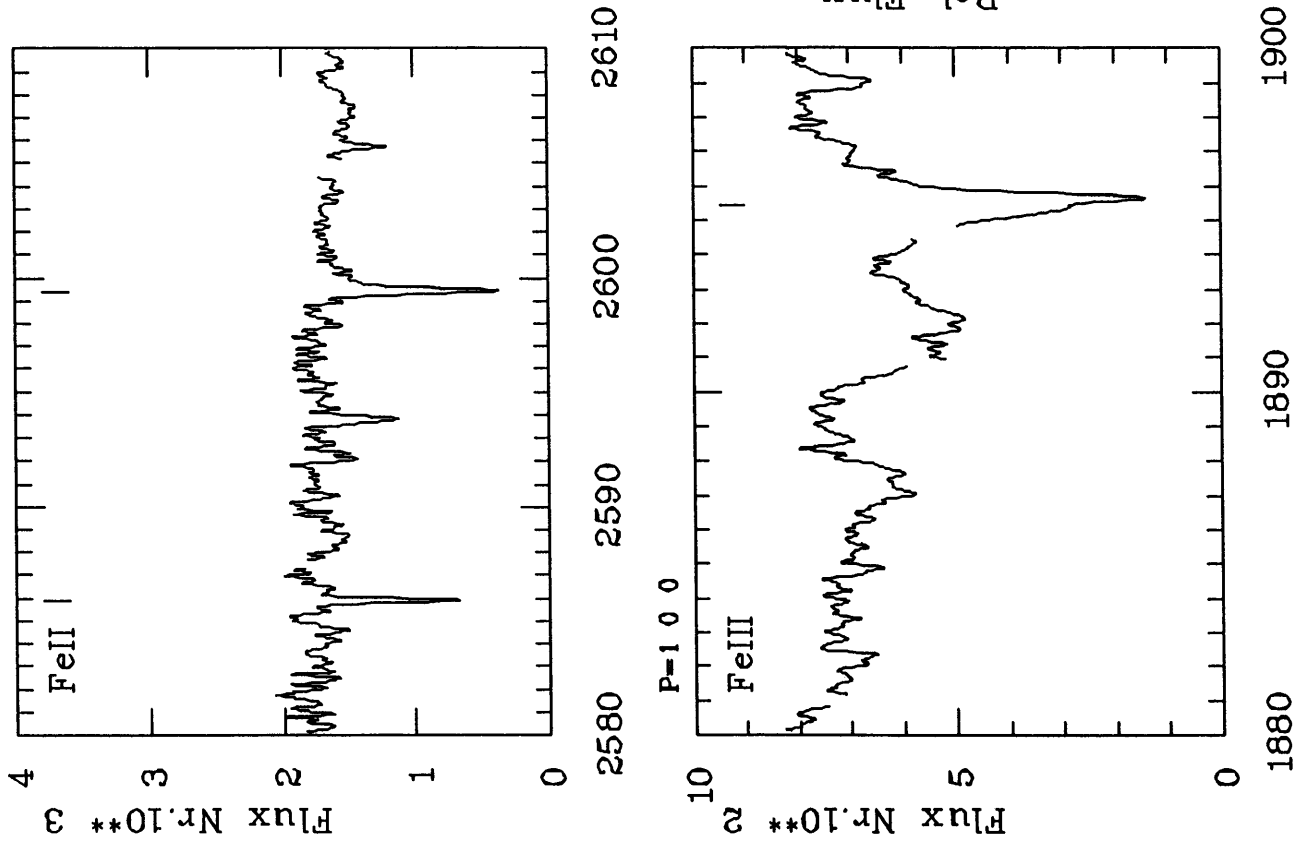
IUE 3 07748 L 80.01.23

IUE 2 06740 L 80.01.23

ESO R G13766 88.04.06

HD 91465 B4Ve

vsini 250

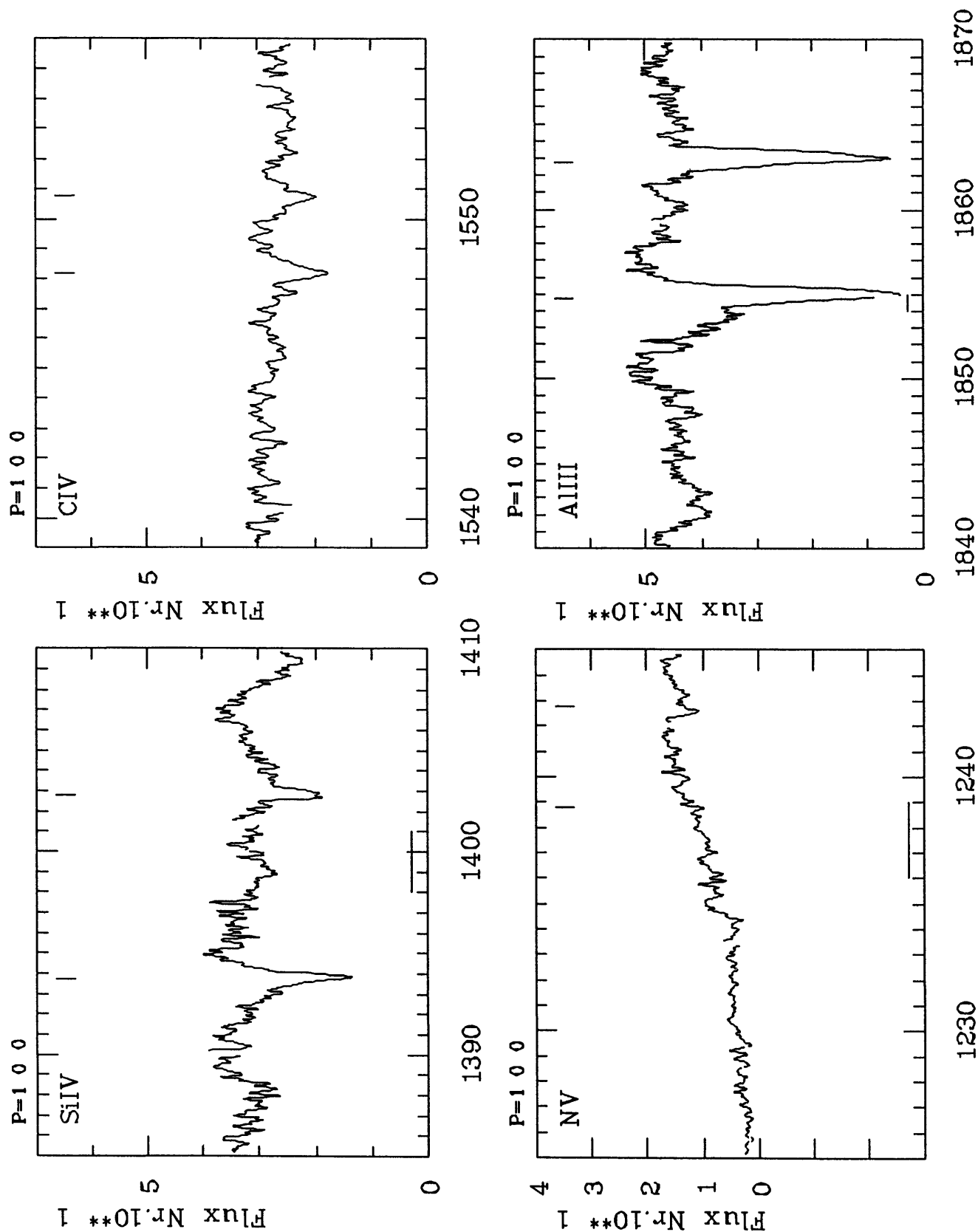


IVE 3 07748 L 80.01.23
 IVE 2 06740 L 80.01.23

ESO R G13766 88.04.06

HD 93563 B8IIIesh

vsini 280



IUE 3 31223 L 87.06.20

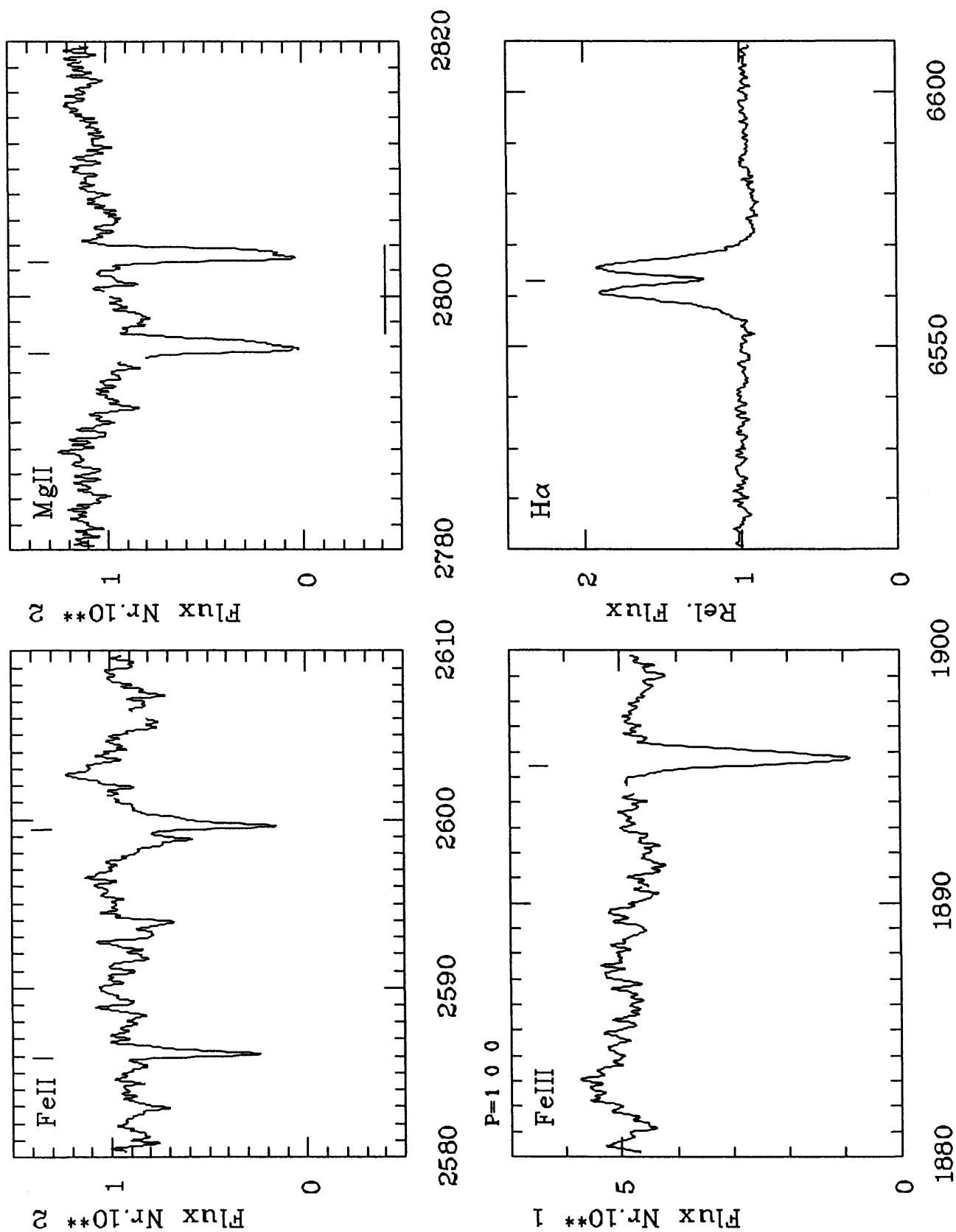
IUE 1 11062 L 87.06.22

ESO R F9258

88.04.08

HD 93563 B8IIIesh

vsini 280



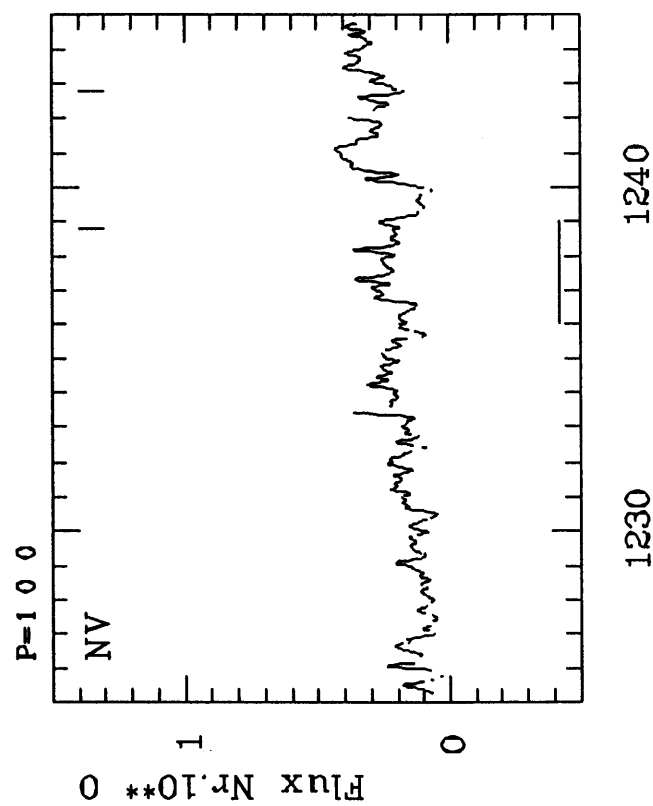
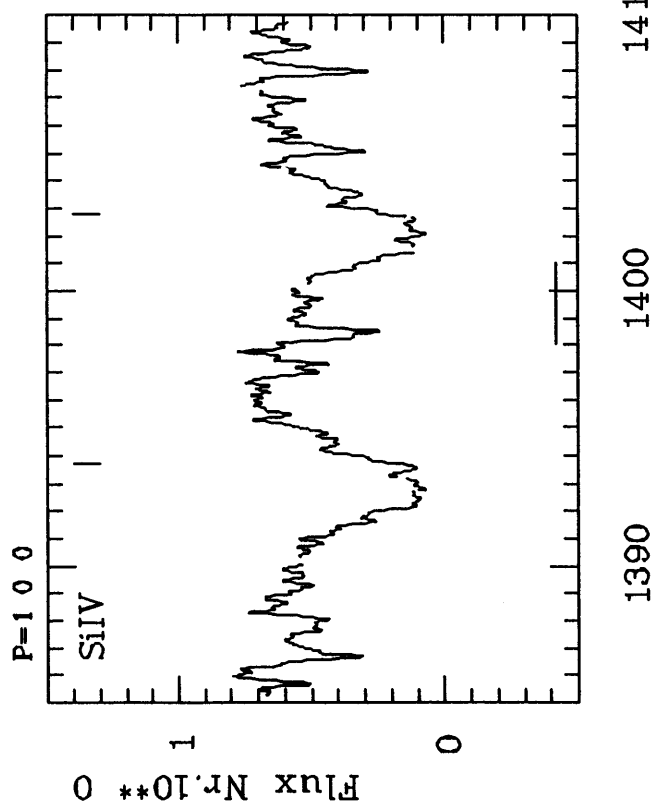
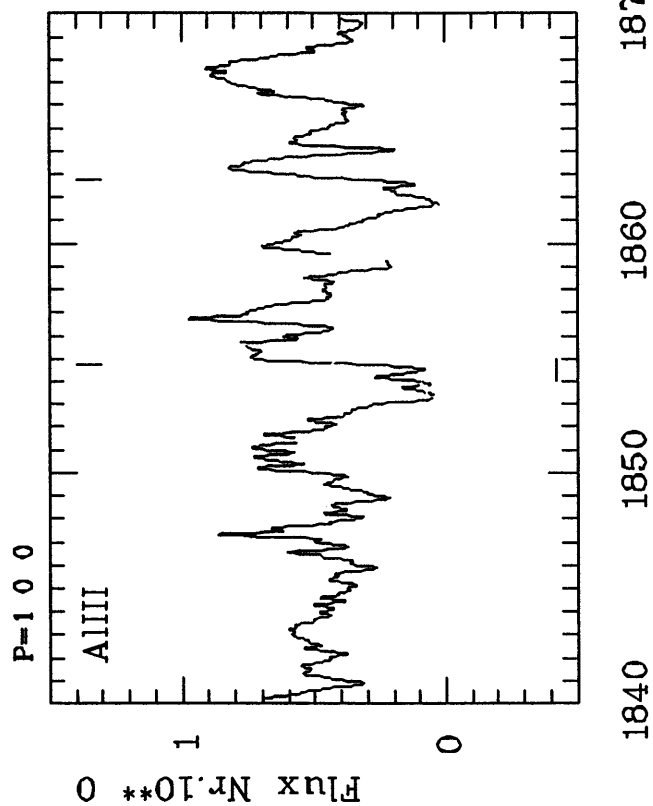
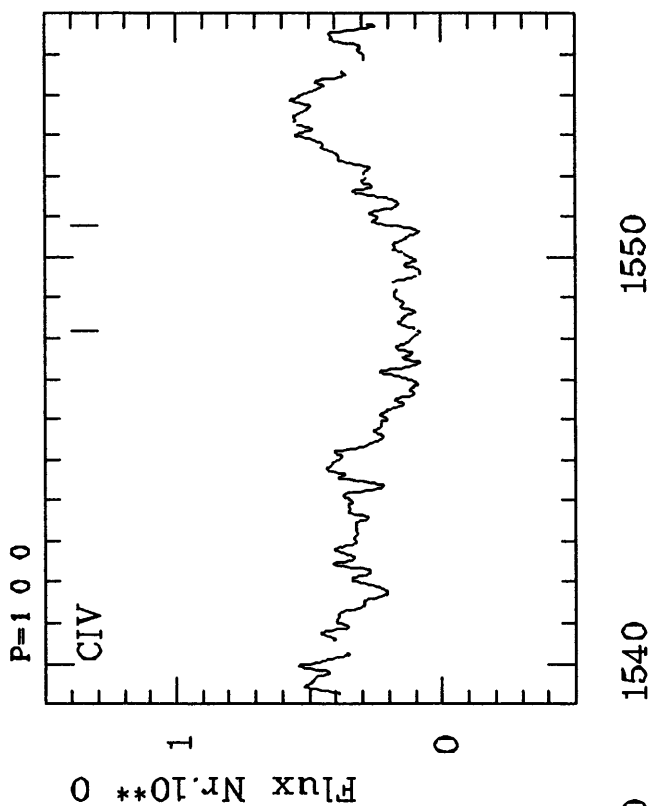
IUE 3 31223 L 87.06.20

IUE 1 11062 L 87.06.22

ESO R F9258

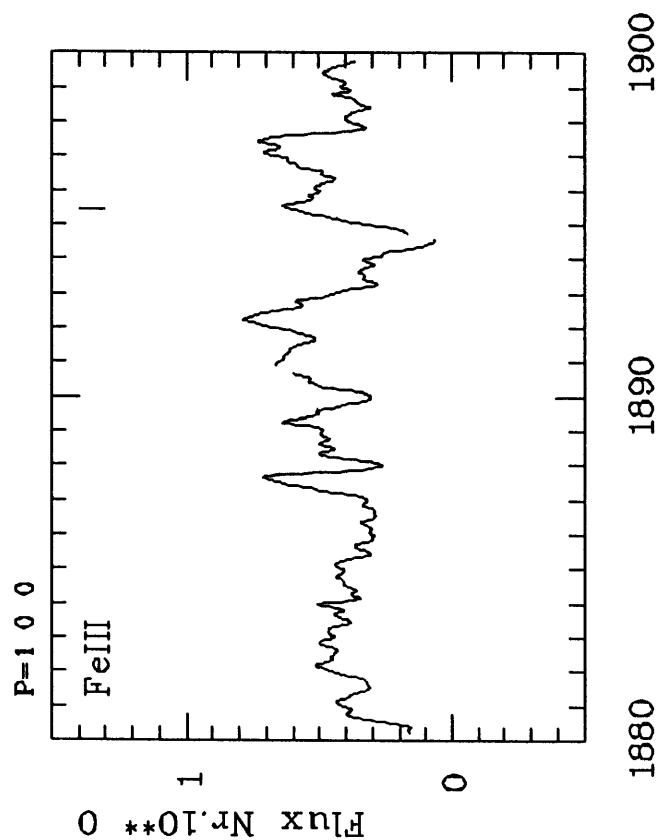
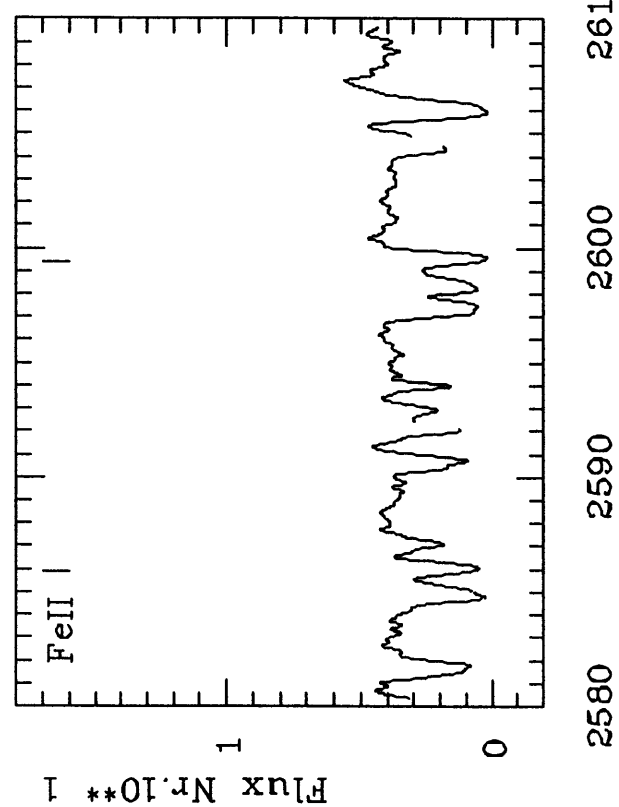
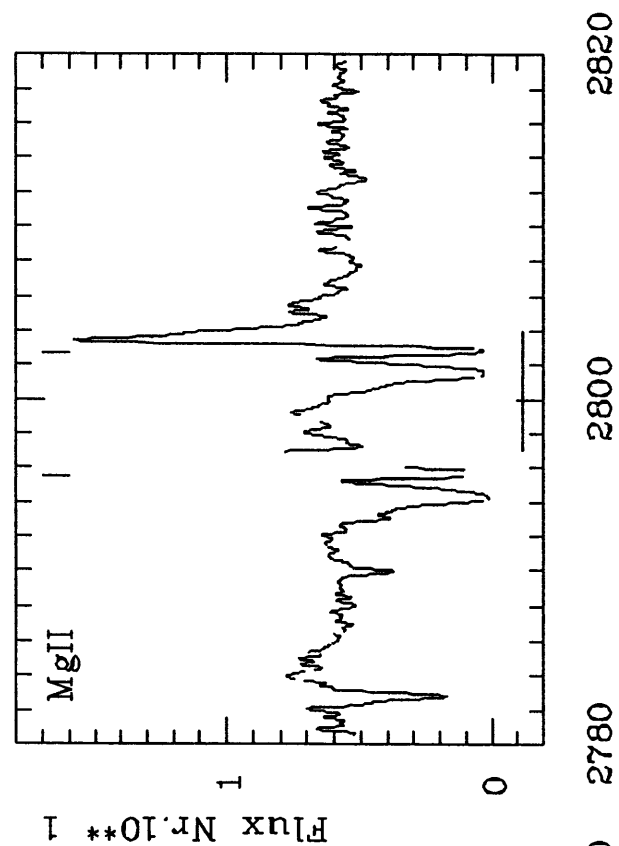
88.04.08

HD 94878 Be



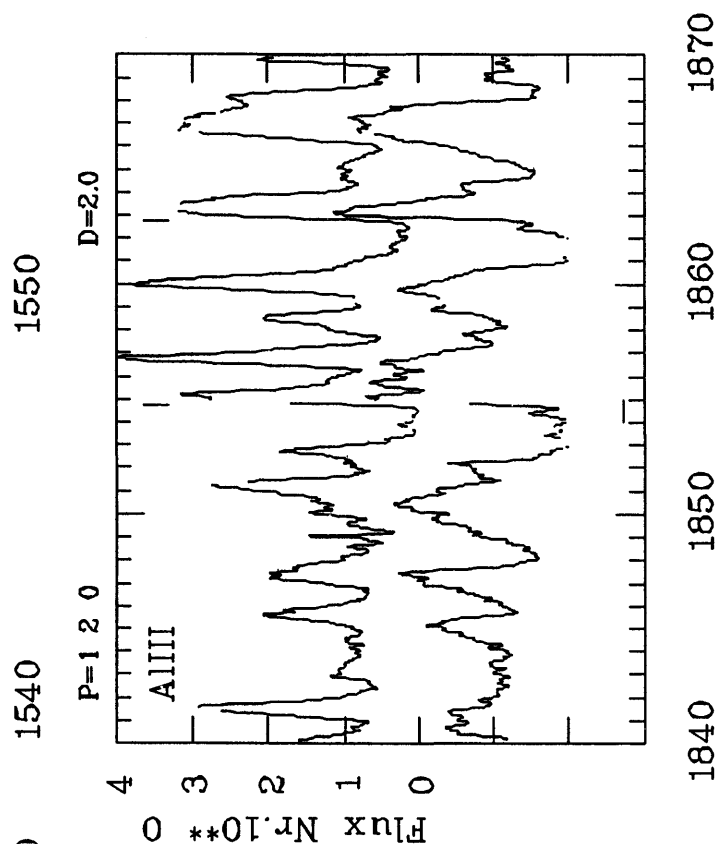
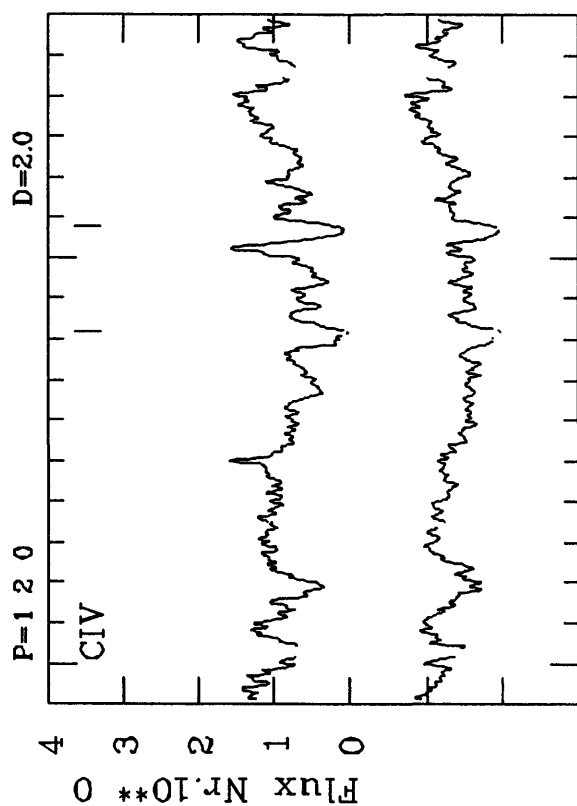
IUE 3 08936 L 80.05.06
IUE 2 04920 L 79.06.29

HD 94878 Be



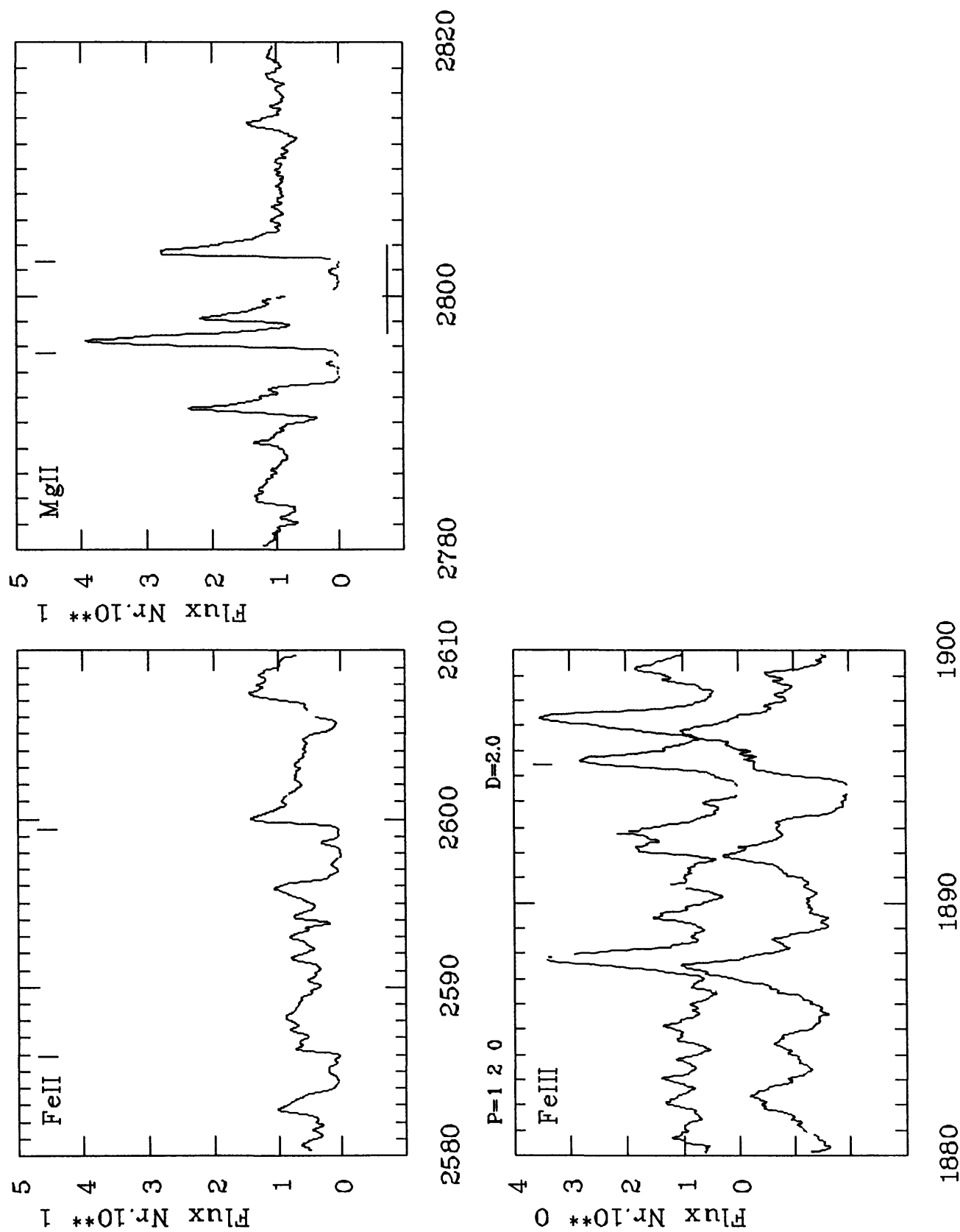
IUE 3 08936 L 80.05.06
 IUE 2 04920 L 79.06.29

HD 94910 B2:pe



IVE 3 23109 L 84.05.25 - 3 28536 L 86.06.23
 IVE 1 03236 L 84.04.28

HD 94910 B2:pe

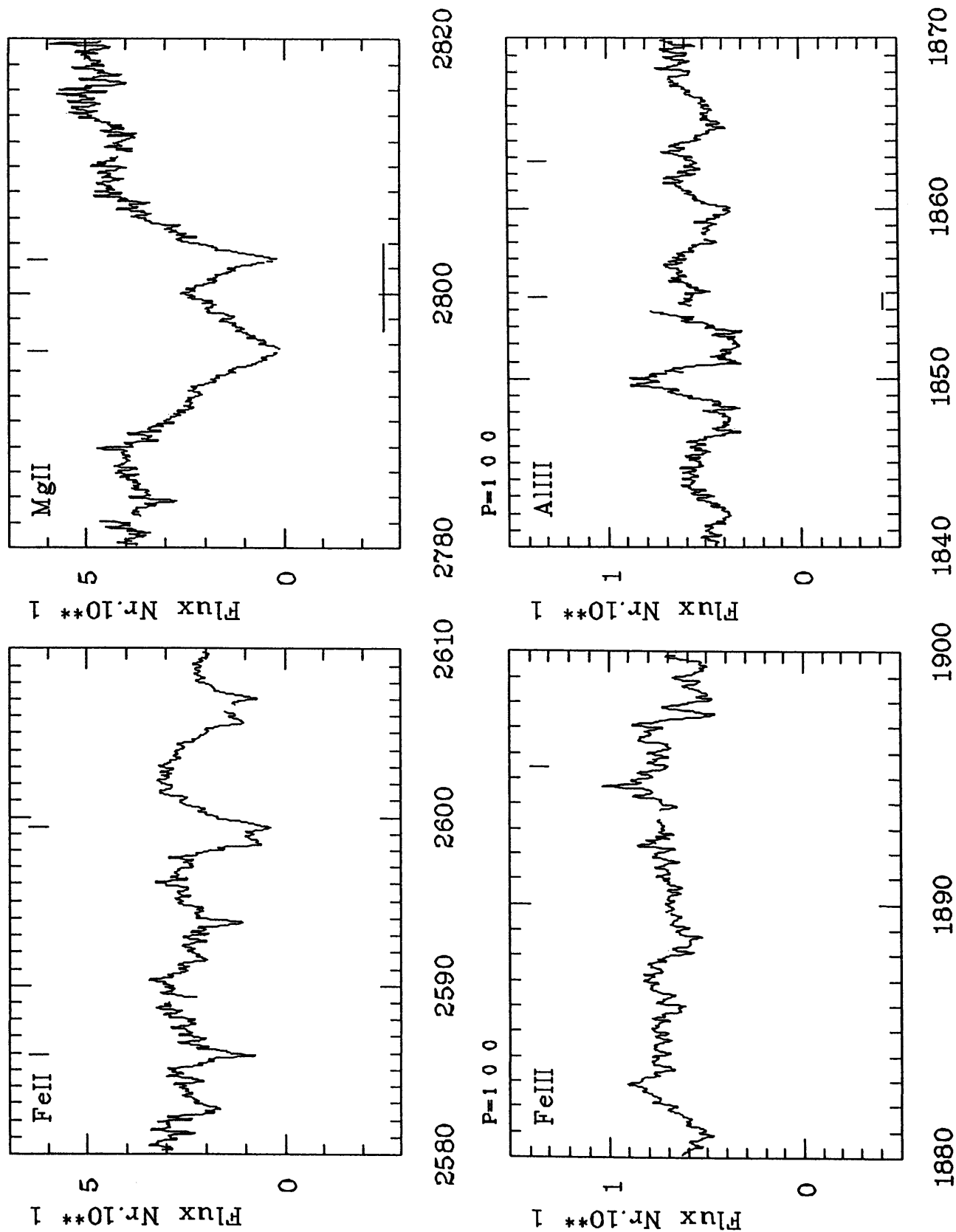


IUE 3 23109 L 84.05.25 - 3 28536 L 86.06.23
 IUE 1 03236 L 84.04.28



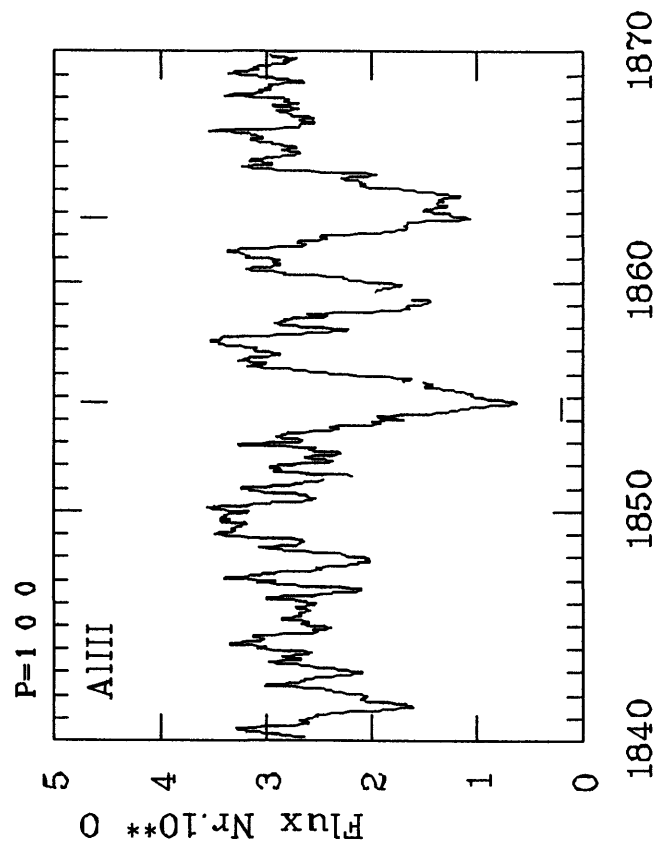
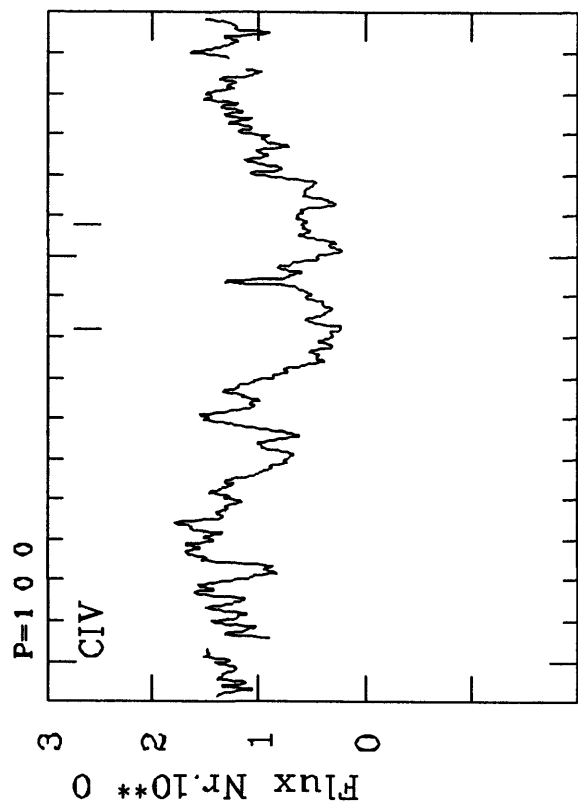
HD 98058 A7IVsh

vsini 230



IUE 3 15504 S 81.11.16
 IUE 2 11980 S 81.11.16

HD 98922 B9Ve

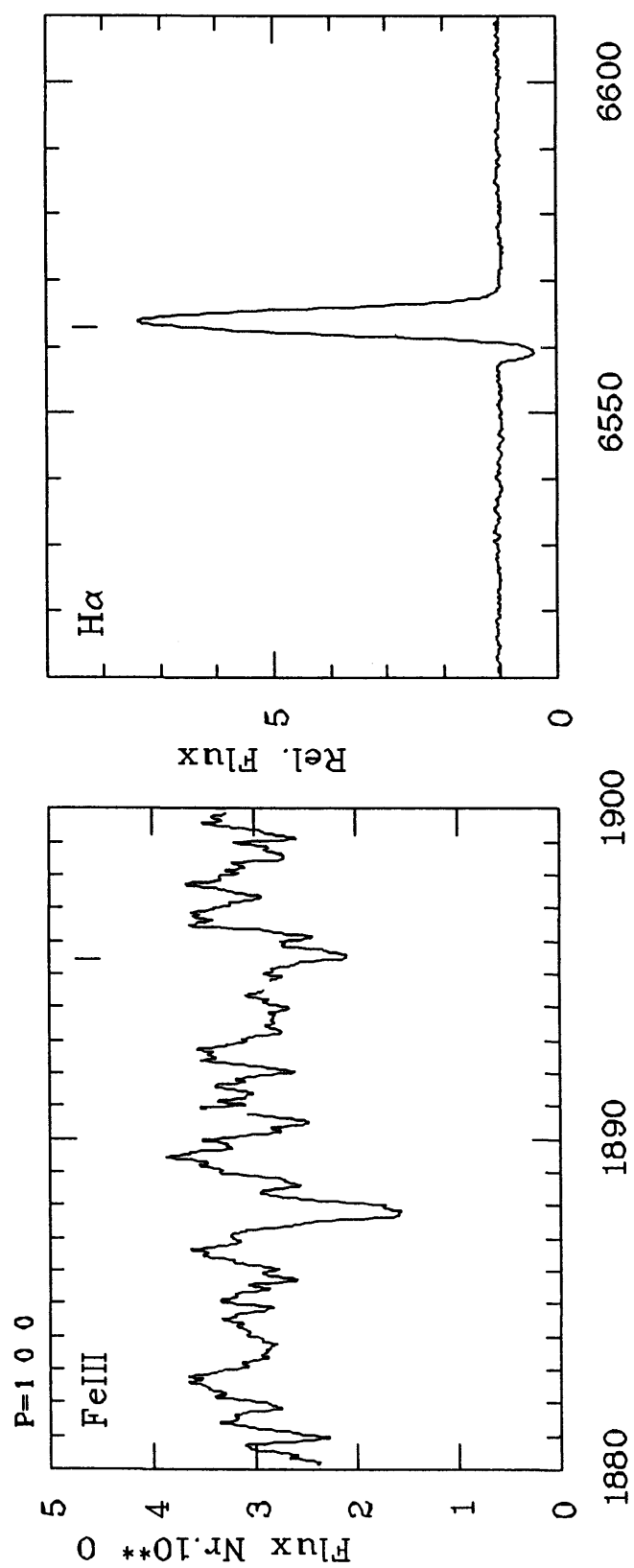


IUE 3 18554 L 82.11.14

ESO R F9259

88.04.08

HD 98922 B9Ve



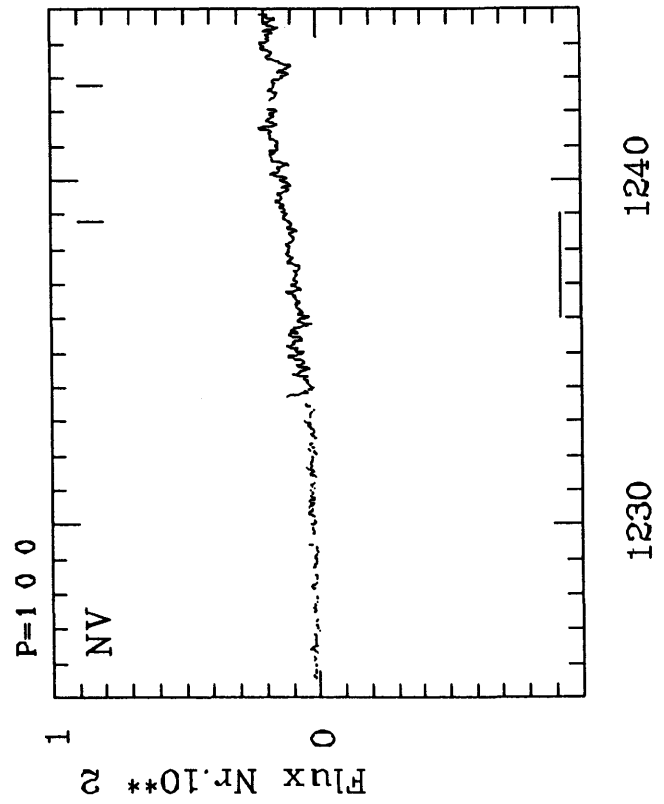
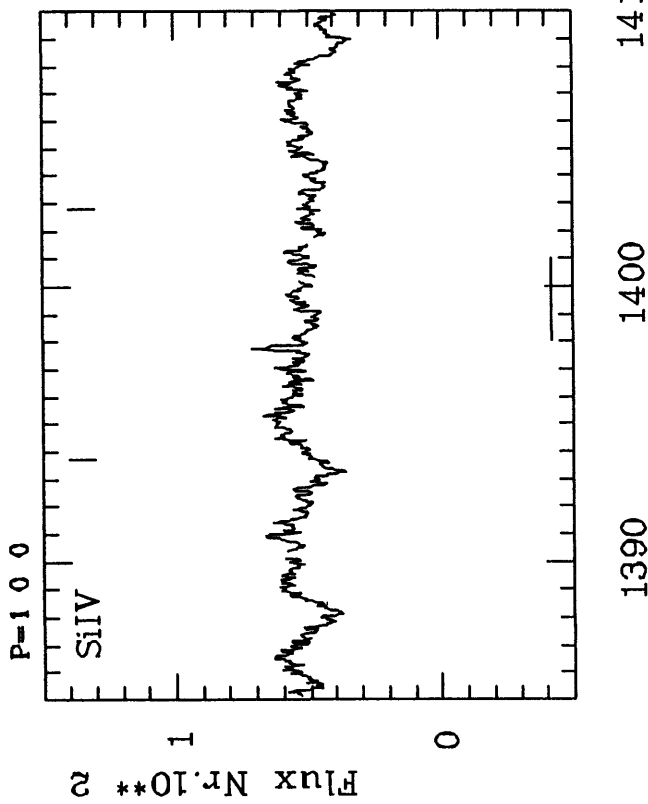
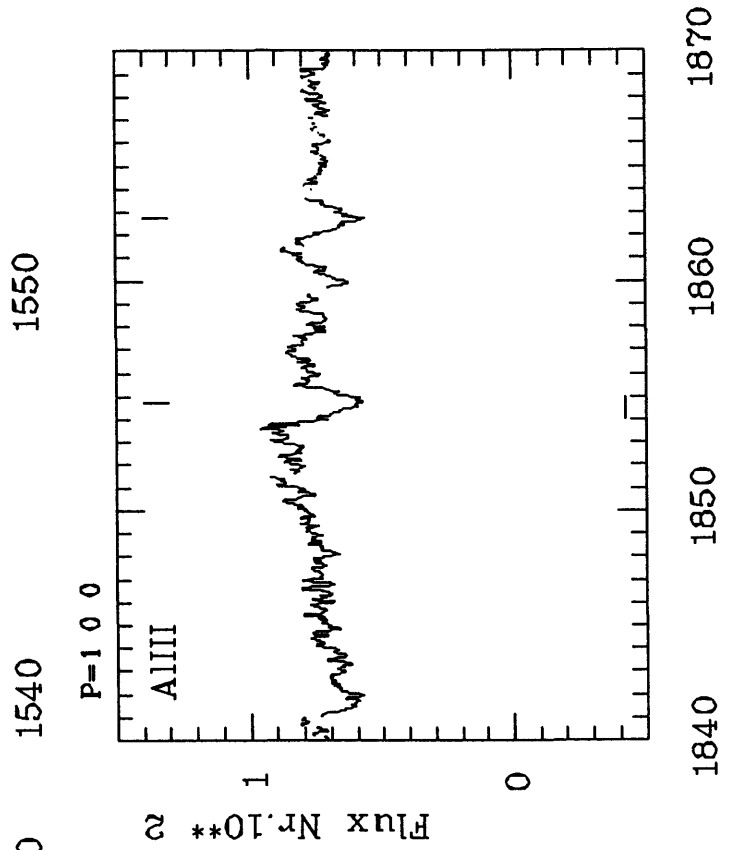
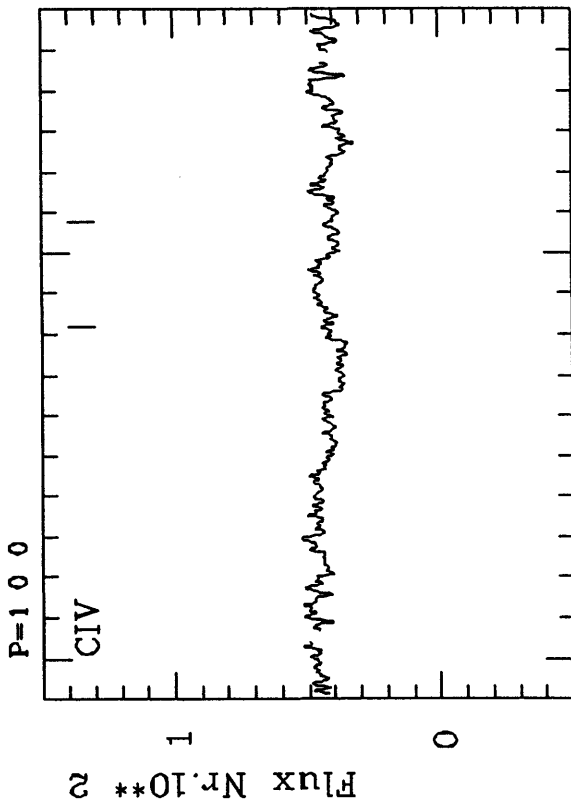
IUE 3 18554 L 82.11.14

ESO R F9259

88.04.08

HD 100673 B9Ve

vsini 125

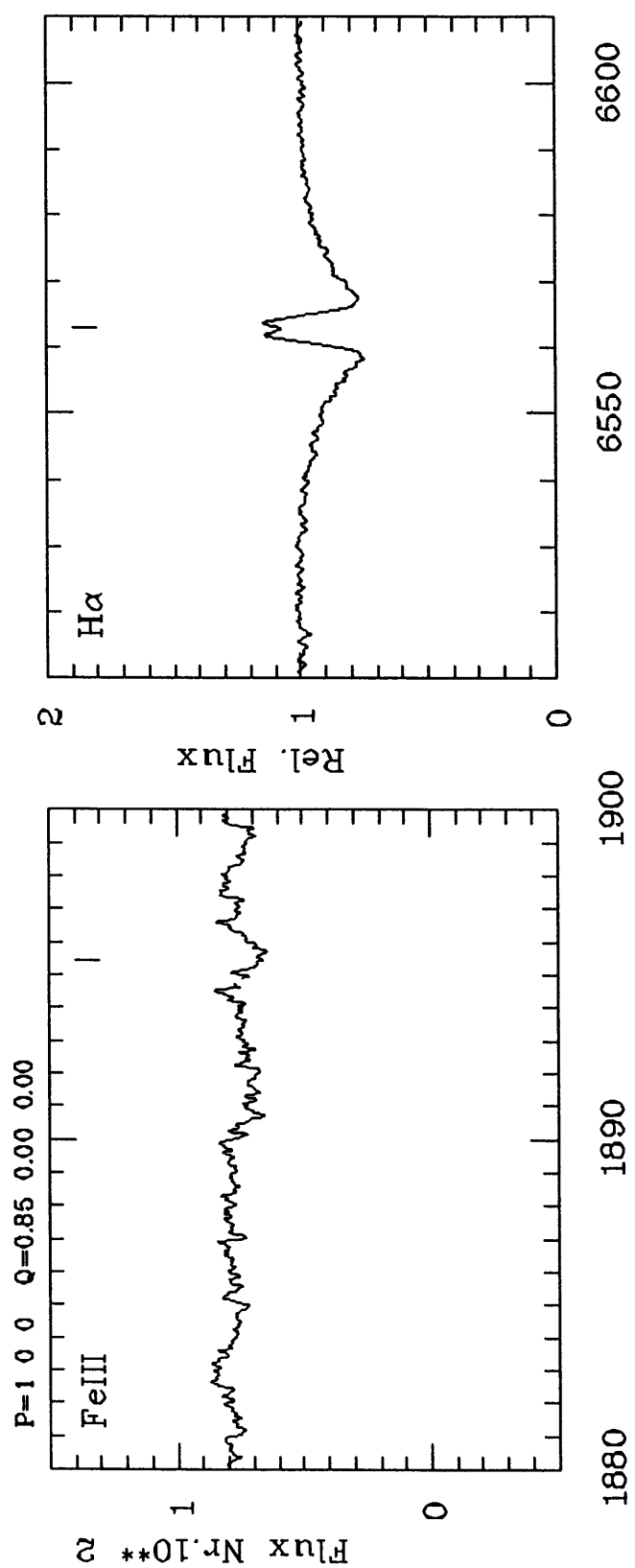


IUE 3 15960 L 82.01.05

ESO R G13774 88.04.07

HD 100673 B9Ve

vsini 125

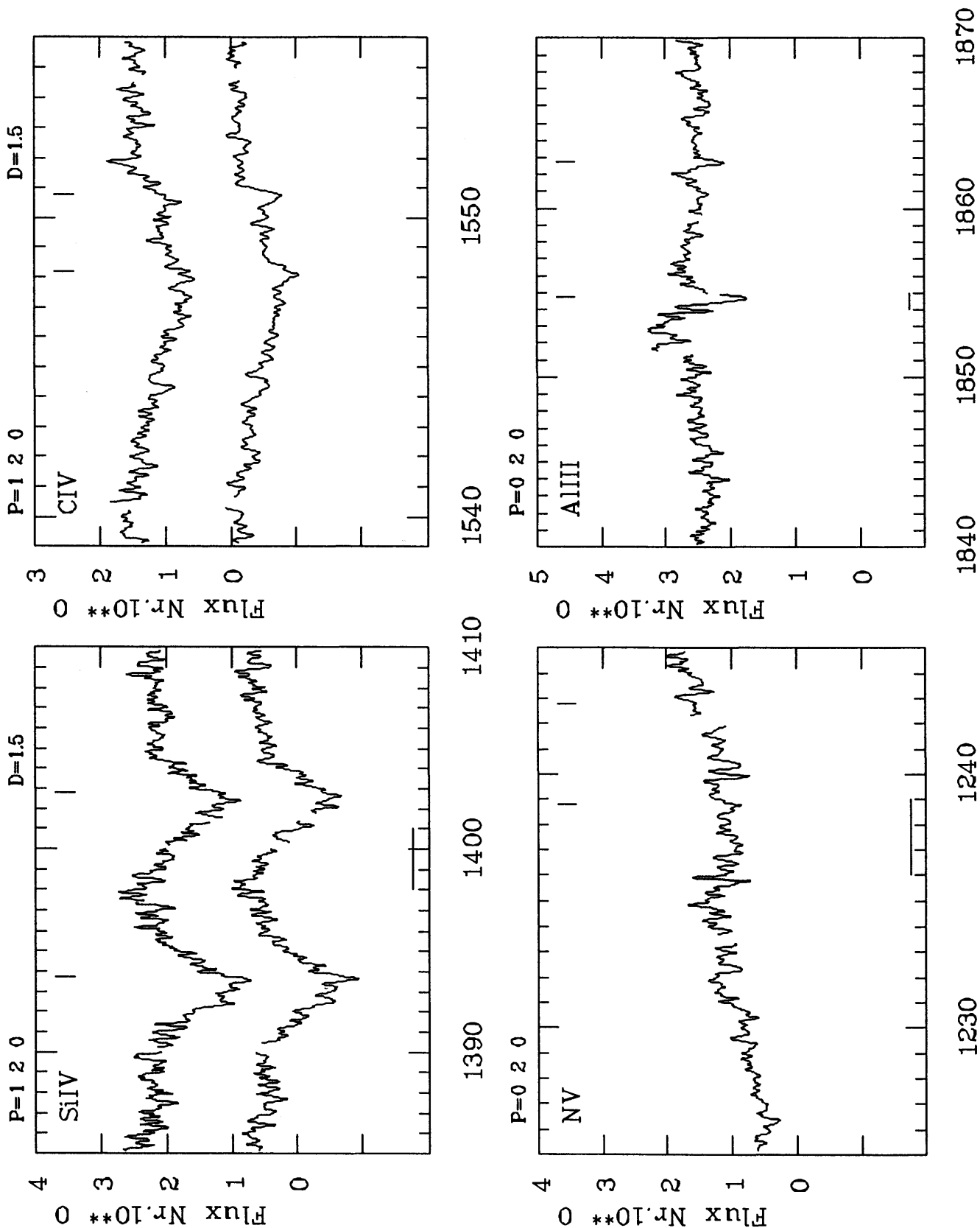


IUE 3 15960 L 82.01.05

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-

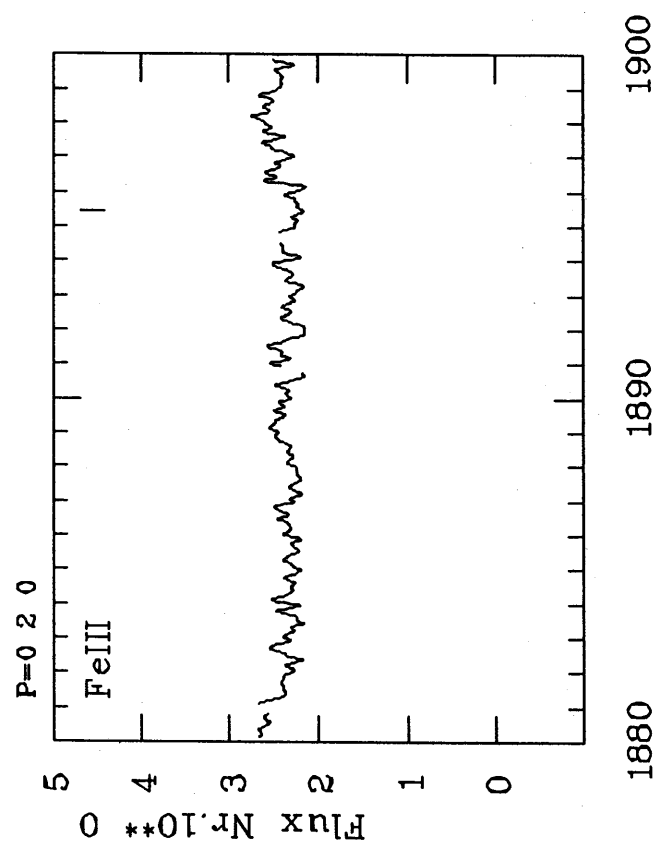
ESO R G13774 88.04.07

HD 102567 B1Vne



IUE 3 08586 L 80.03.29 - 3 10806 L 80.12.12

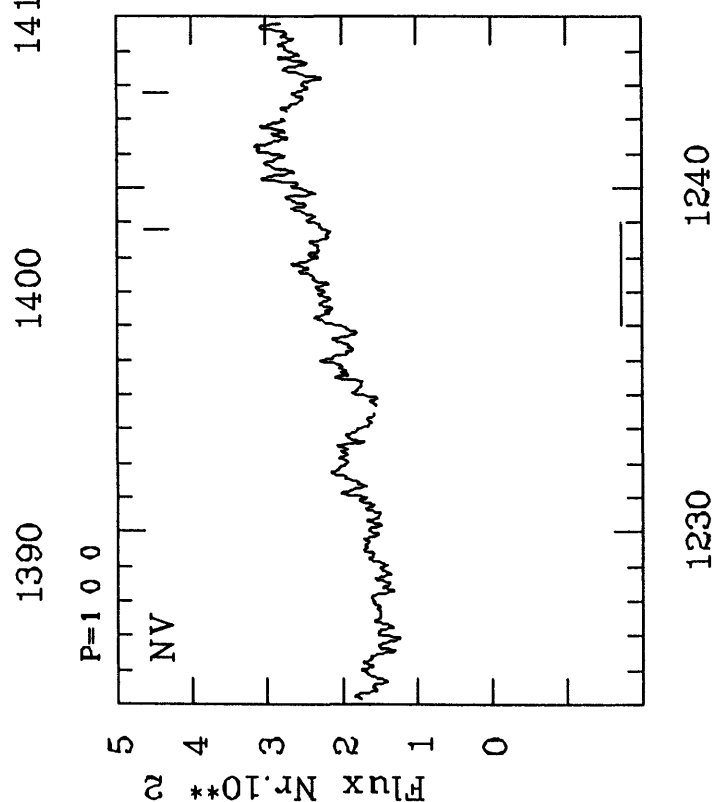
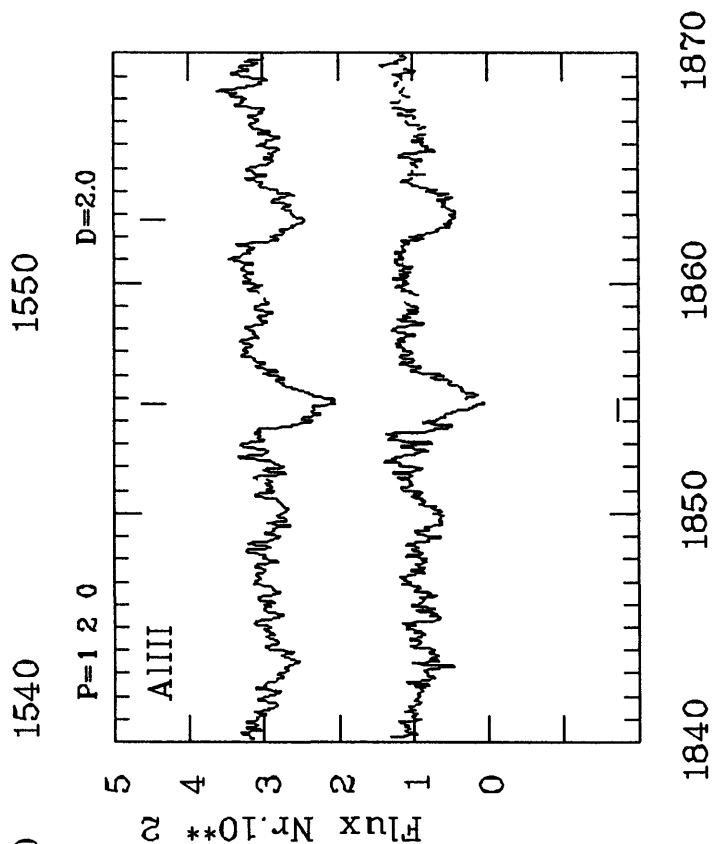
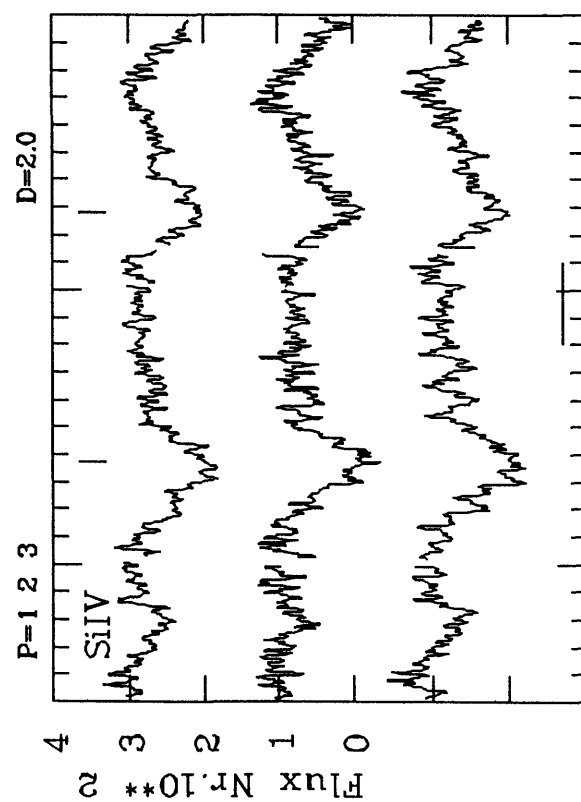
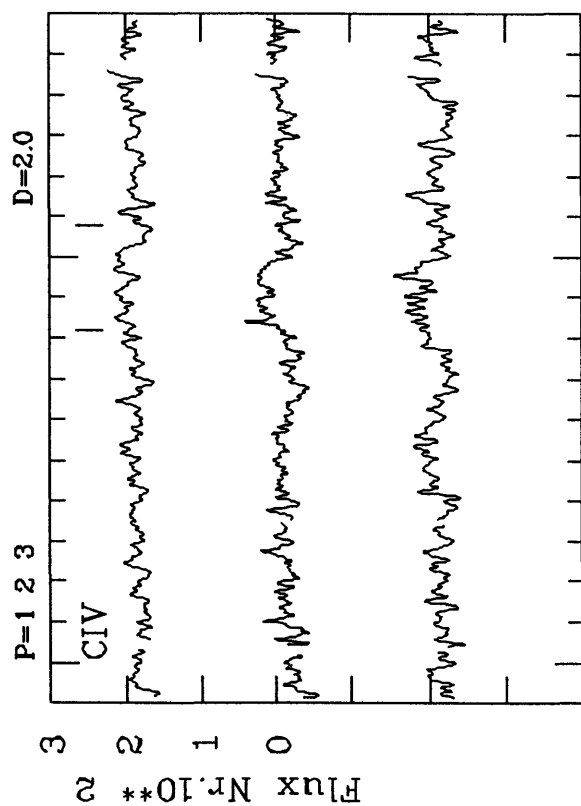
HD 102567 B1Vne



IUE 3 08586 L 80.03.29 - 3 10806 L 80.12.12

HD 102776 B4Ve

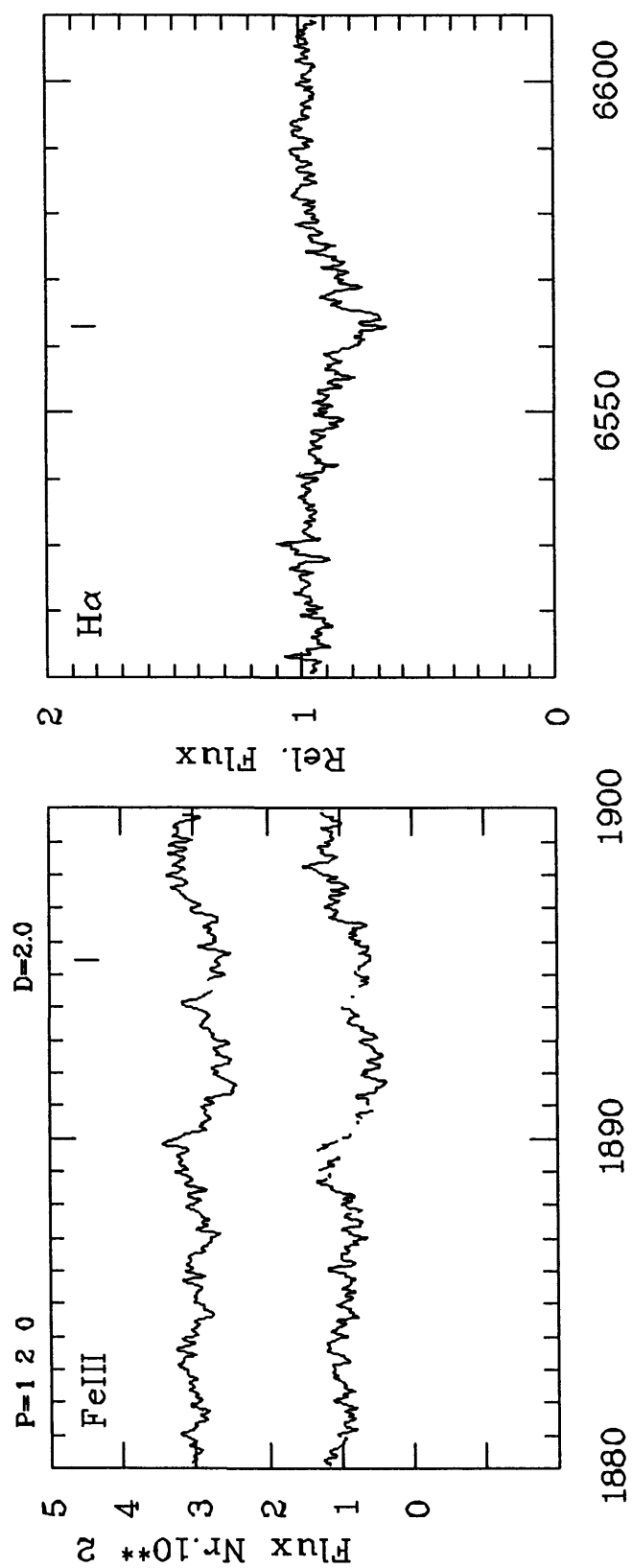
vsini 210



IUE 3 22095 L 84.01.25 - 3 26210 L 85.06.19 - 3 26390 L 85.07.10

HD 102776 B4Ve

vsini 210



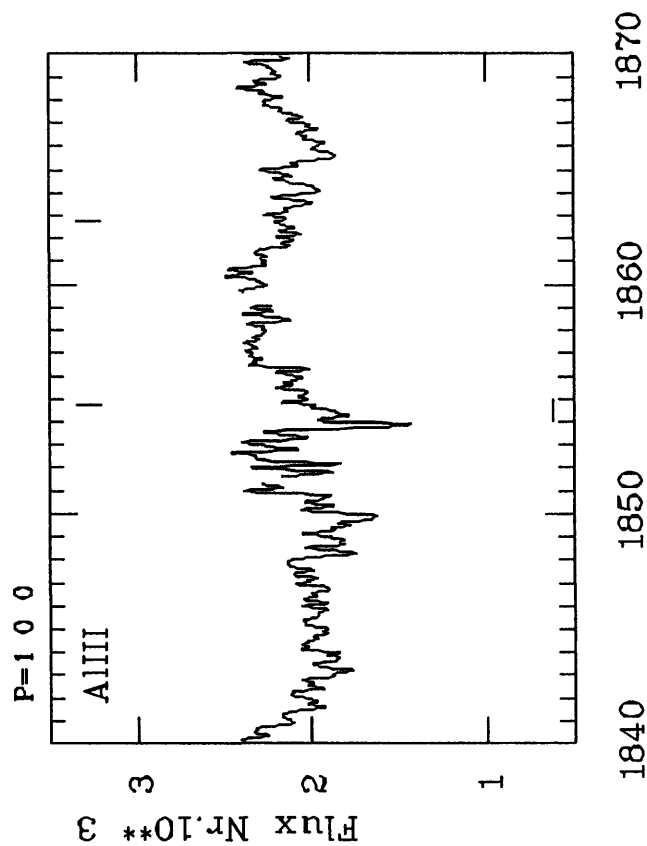
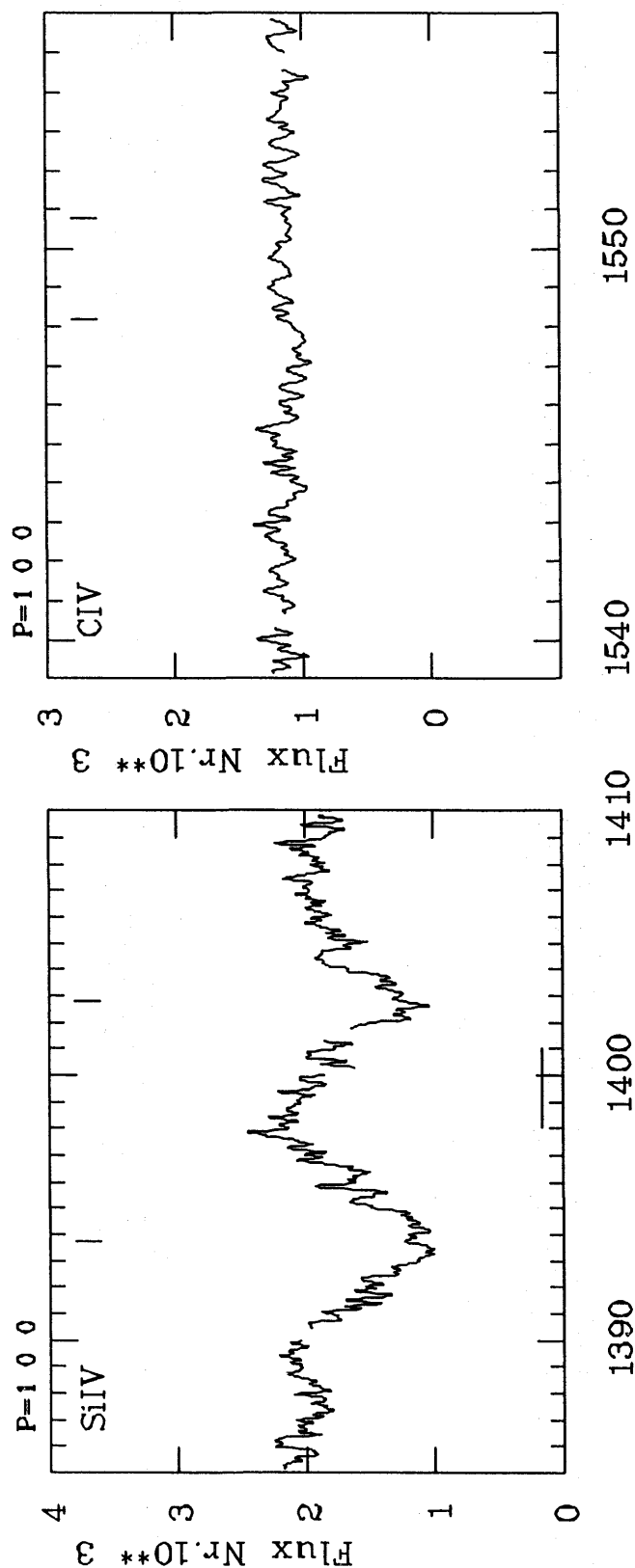
IUE 3 22095 L 84.01.25 - 3 26210 L 85.06.19 - 3 26390 L 85.07.10

ESO R F9261

88.04.08

HD 105435 B2IVe

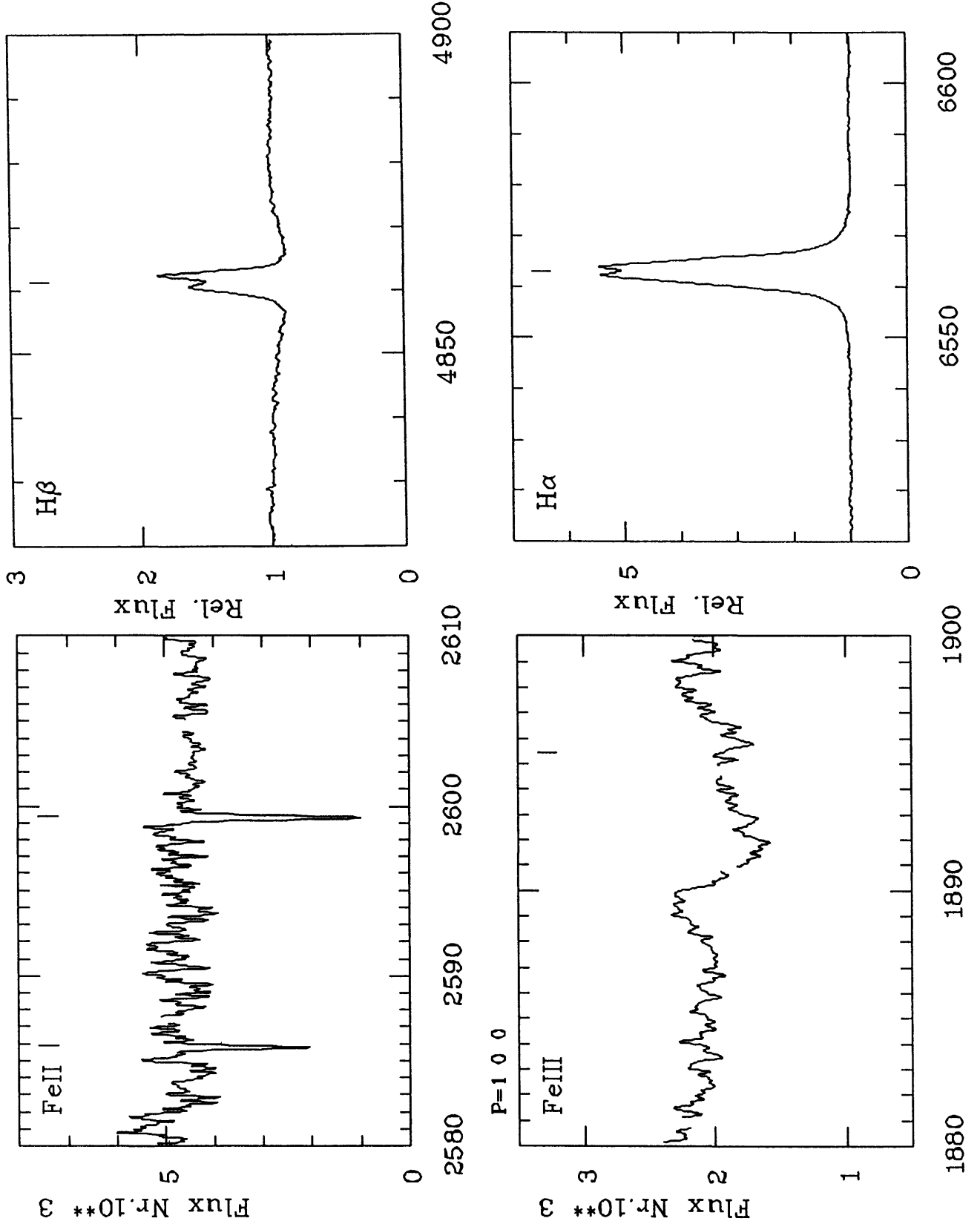
vsini 220



IUE 3 07750 L 80.01.23
 IUE 2 06742 L 80.01.23
 ESO B G13784 88.04.09
 ESO R G13775 88.04.07

HD 105435 B2IVe

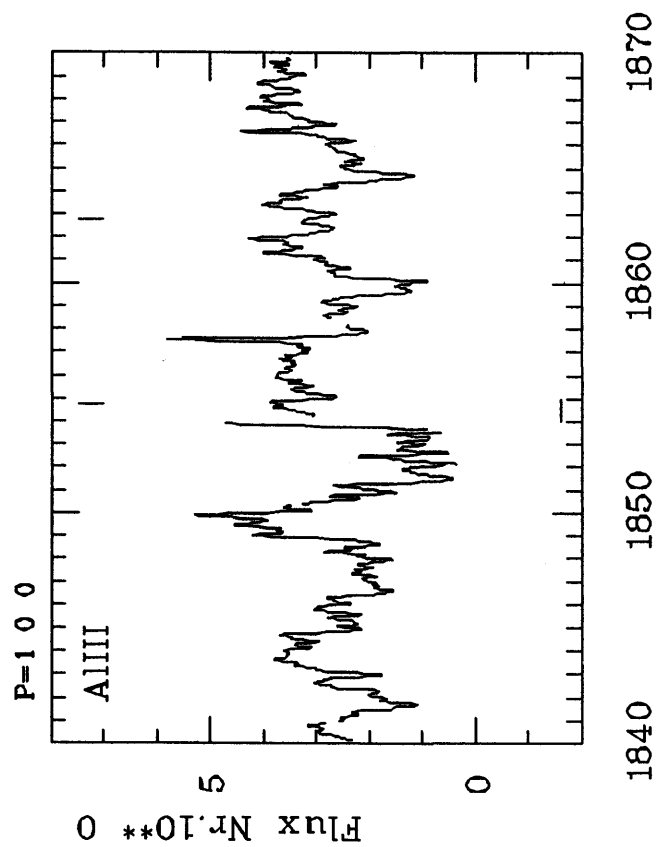
vsini 220



IUE 3 07750 L 80.01.23
 IUE 2 06742 L 80.01.23
 ESO B G13784 88.04.09
 ESO R G13775 88.04.07

HD 108283 F0IIIsh

vsini 200



IUE 3 15506 S 81.11.16

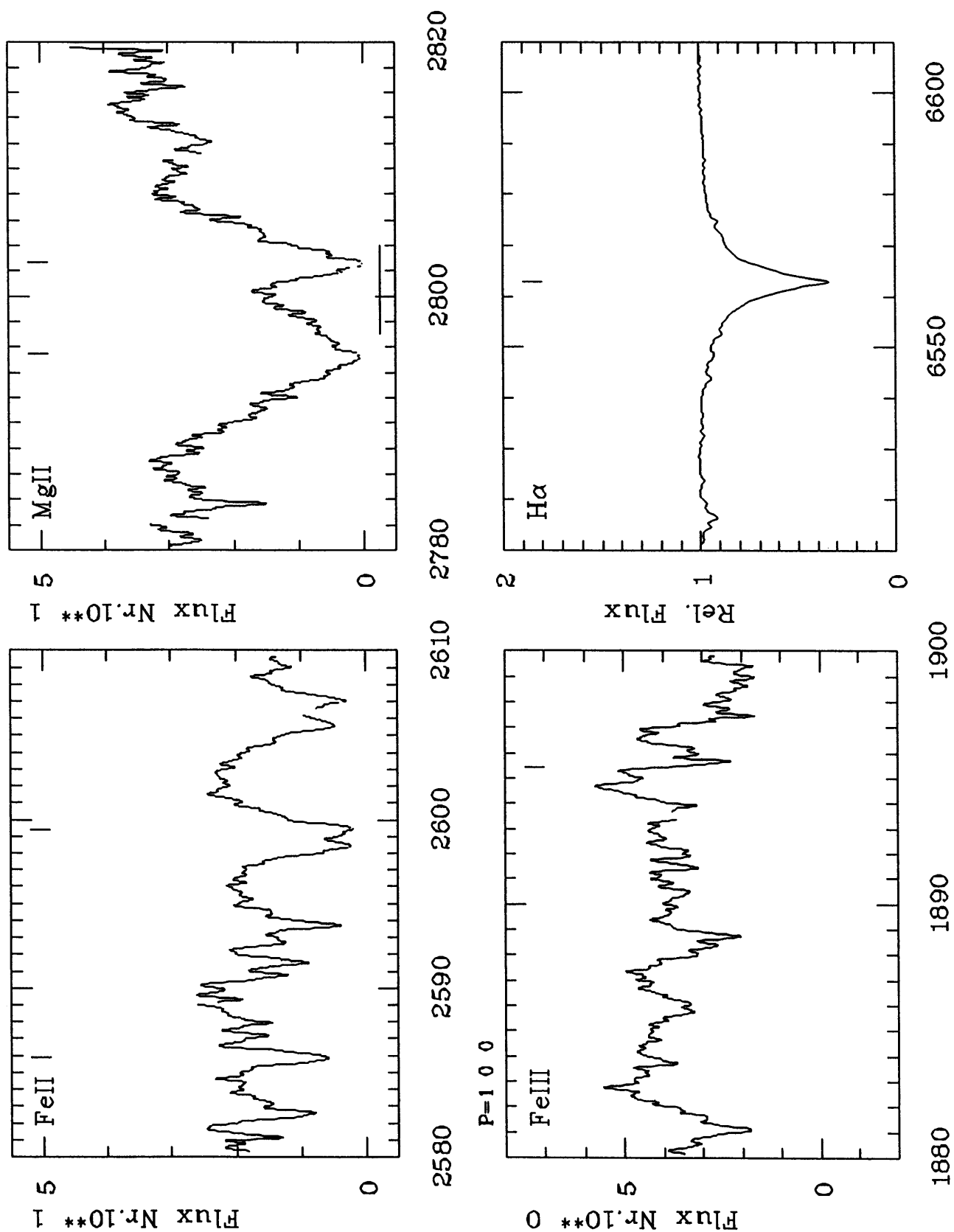
IUE 2 11982 S 81.11.16

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OHP R CCD20007 88.03.25

HD 108283 F0IIIsh

vsini 200



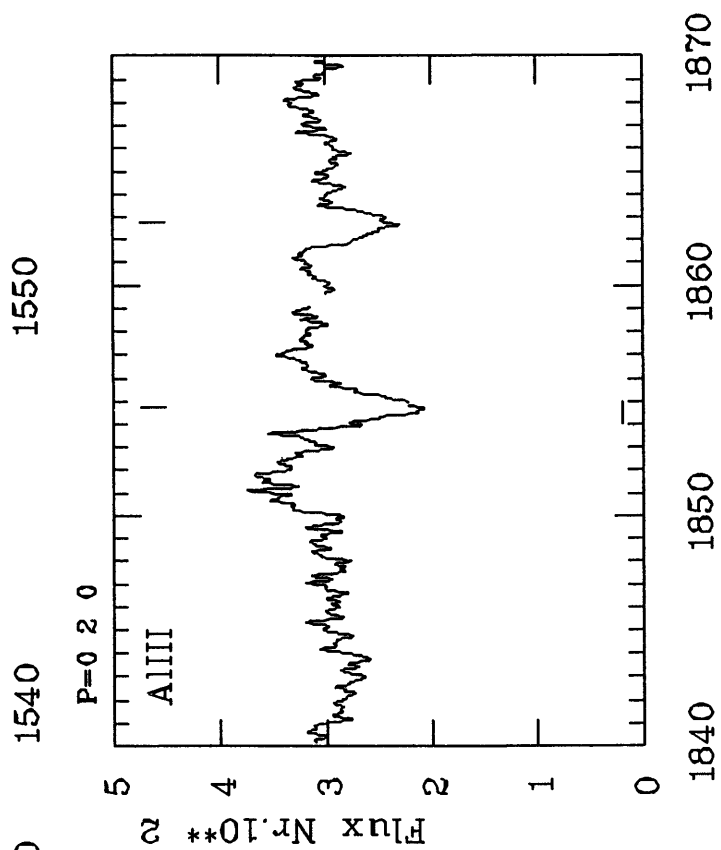
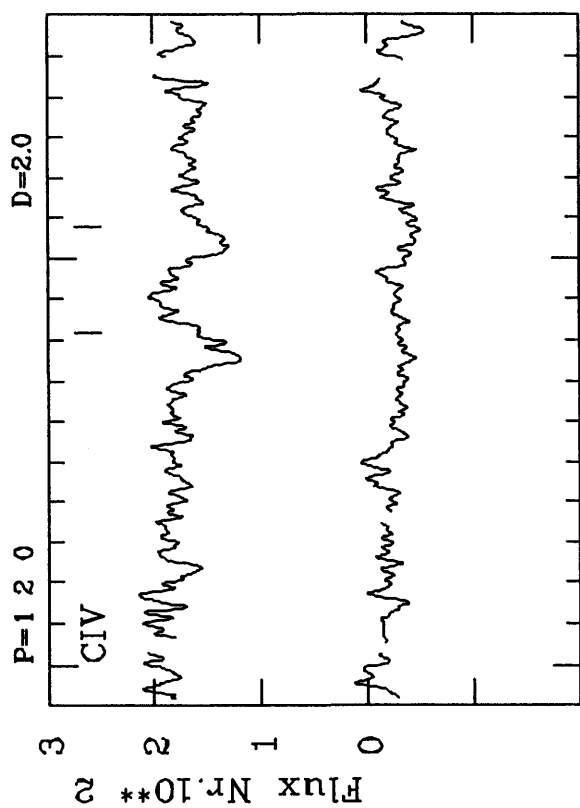
IUE 3 15506 S 81.11.16

IUE 2 11982 S 81.11.16

OHP R CCD20007 88.03.25

HD 109387 B5IIIe

vsini 200



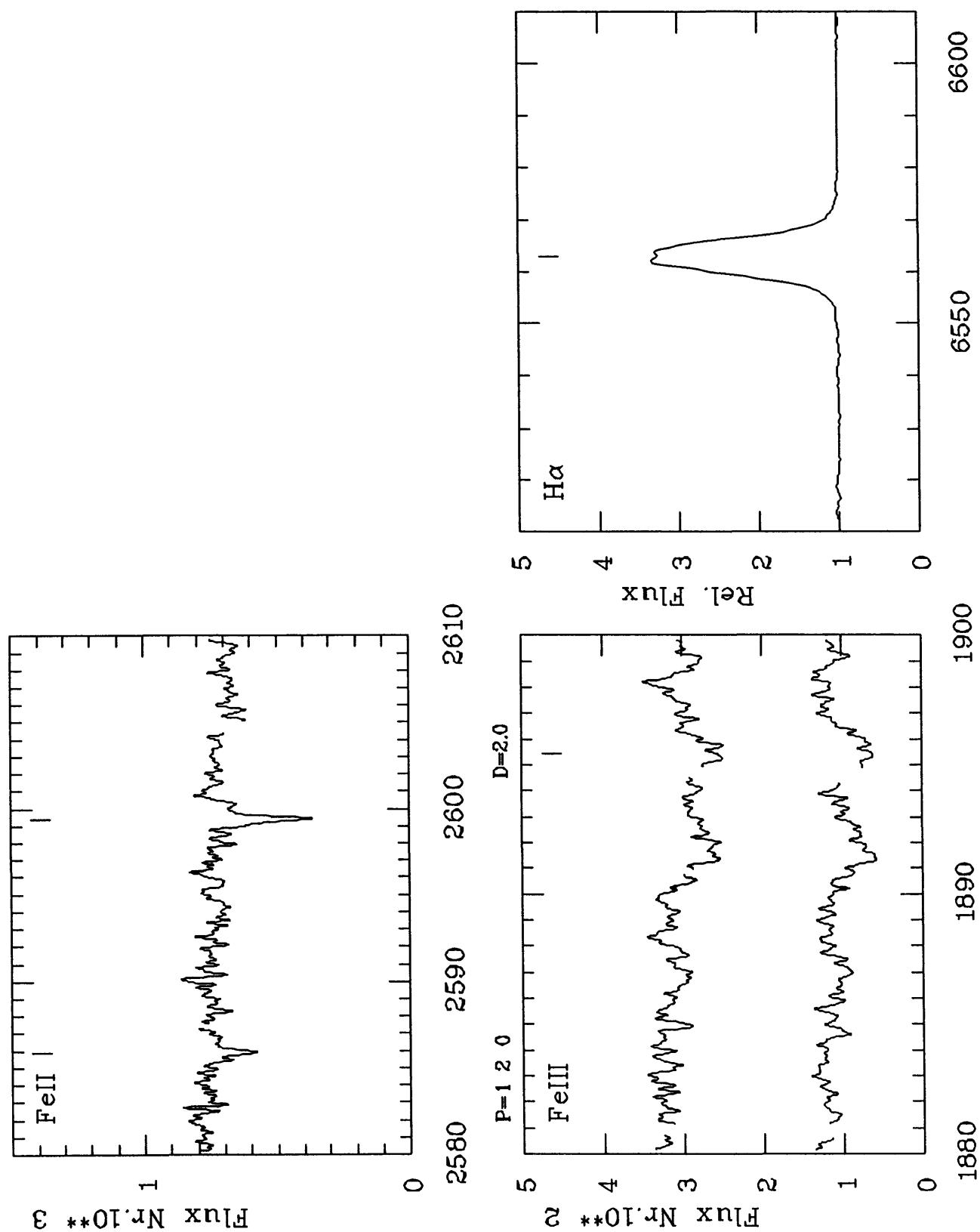
IUE 3 04763 L 79.03.27 - 3 15056 L 81.09.20

IUE 2 04132 L 79.03.27

OHP R CCD20013 88.03.27

HD 109387 B5IIIe

vsini 200



IUE 3 04763 L 79.03.27 - 3 15056 L 81.09.20

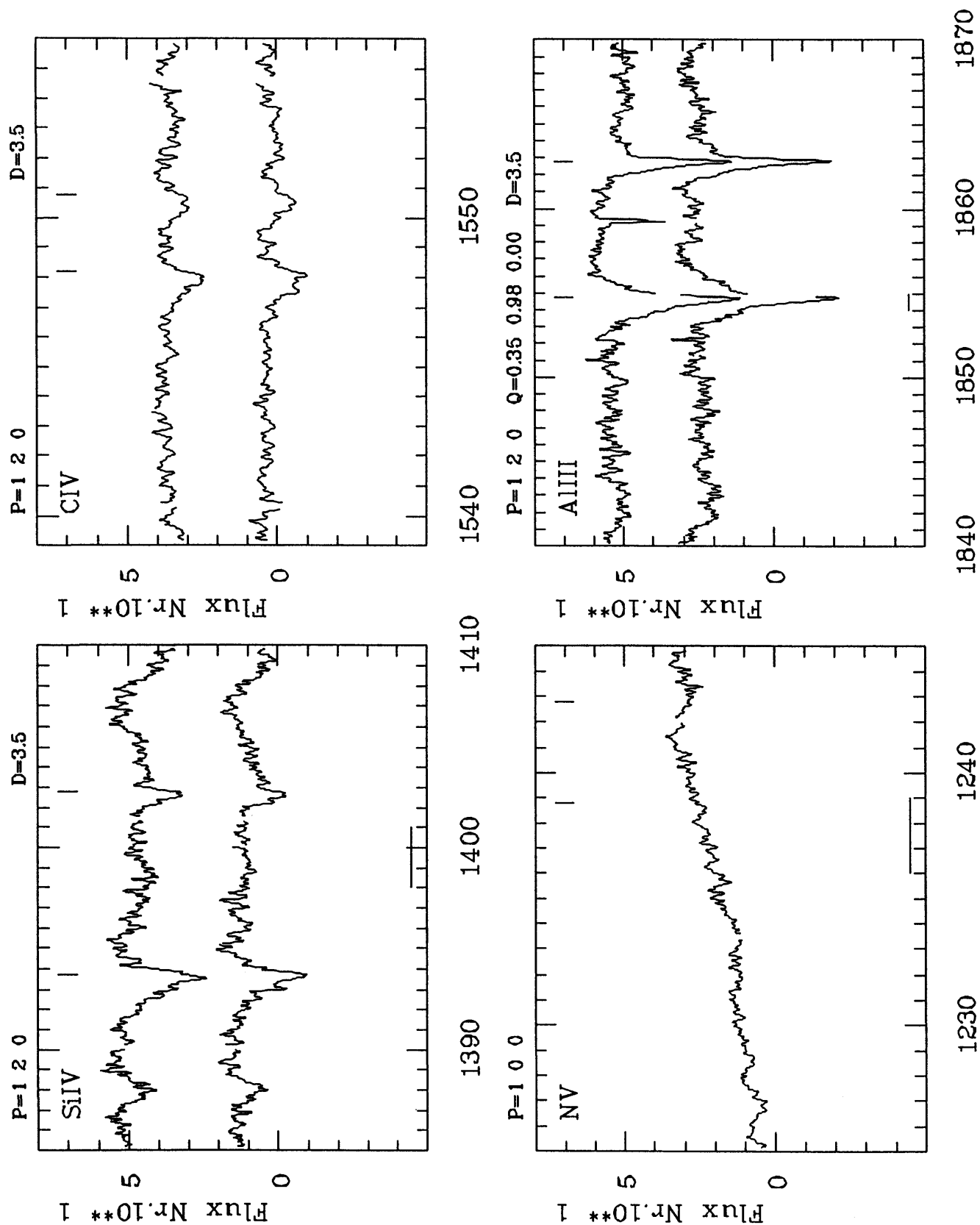
IUE 2 04132 L 79.03.27

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OHP R CCD20013 88.03.27

HD 110335 B6IVe

vsini 250



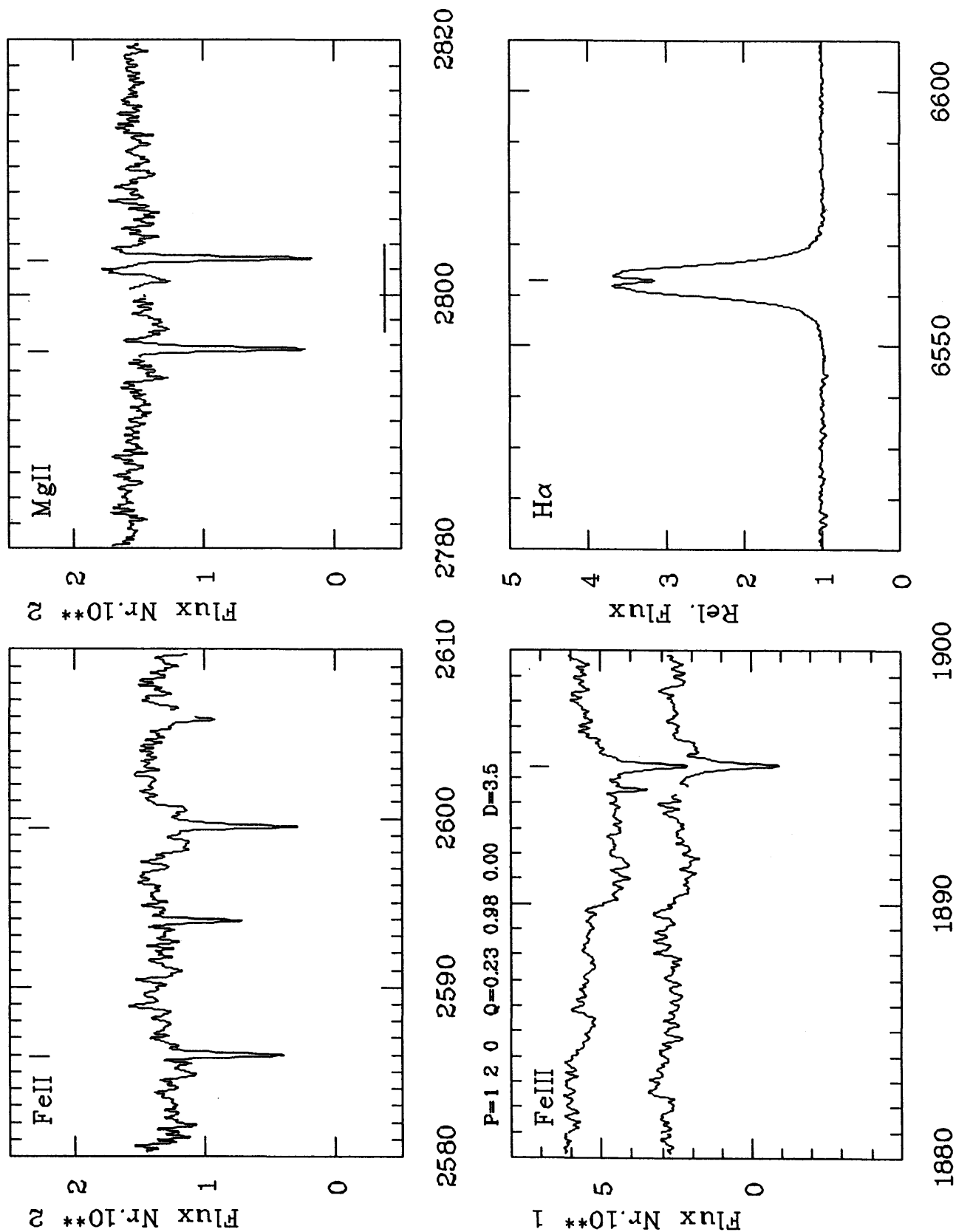
IUE 3 26124 L 85.06.08 - 3 31222 L 87.06.20

IUE 1 11048 L 87.06.20

ESO R G13759 88.04.05

HD 110335 B6IVe

vsini 250



IUE 3 26124 L 85.06.08 - 3 31222 L 87.06.20

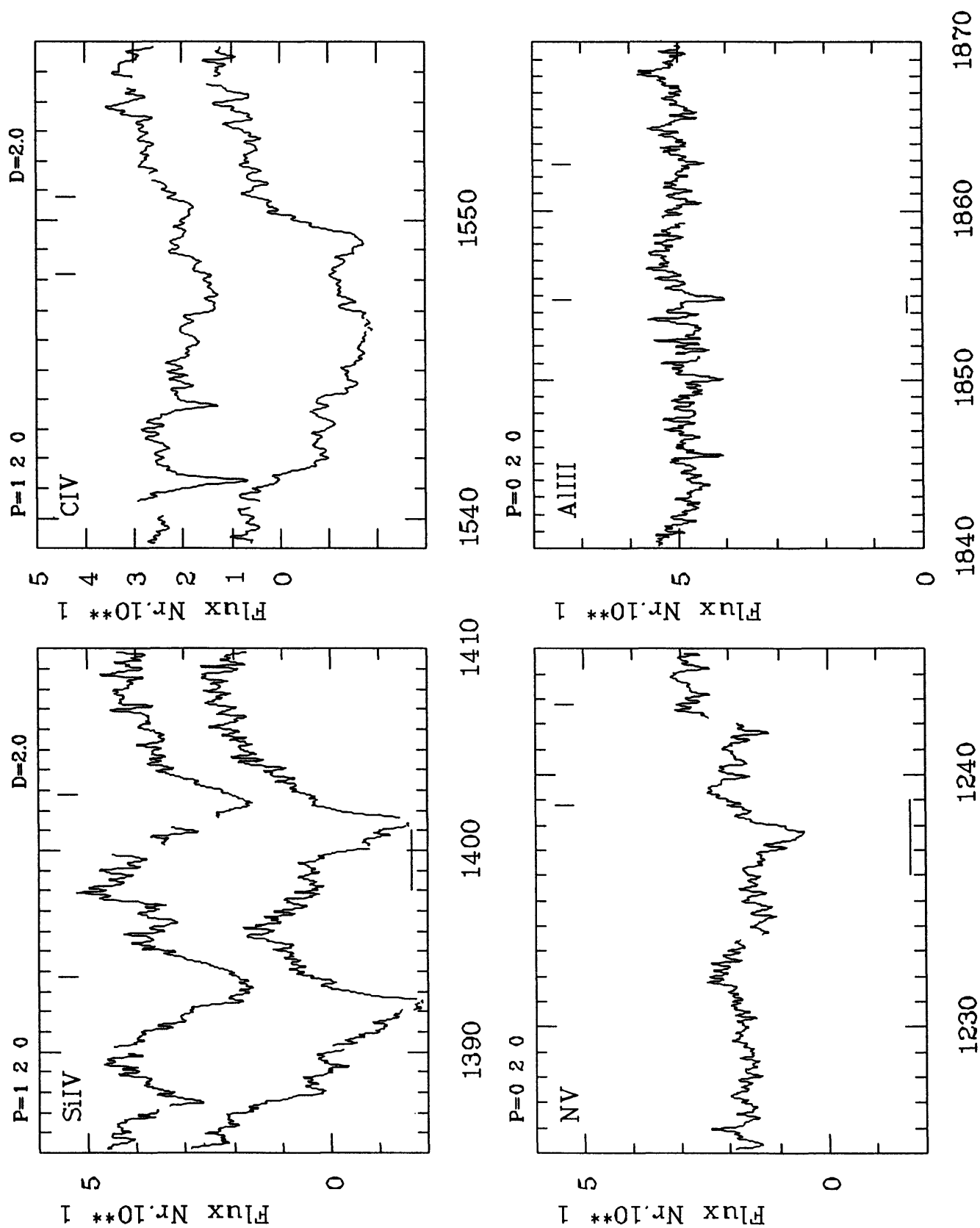
IUE 1 11048 L 87.06.20

-

ESO R G13759 88.04.05

HD 110432 B1IIIe

vsini 300



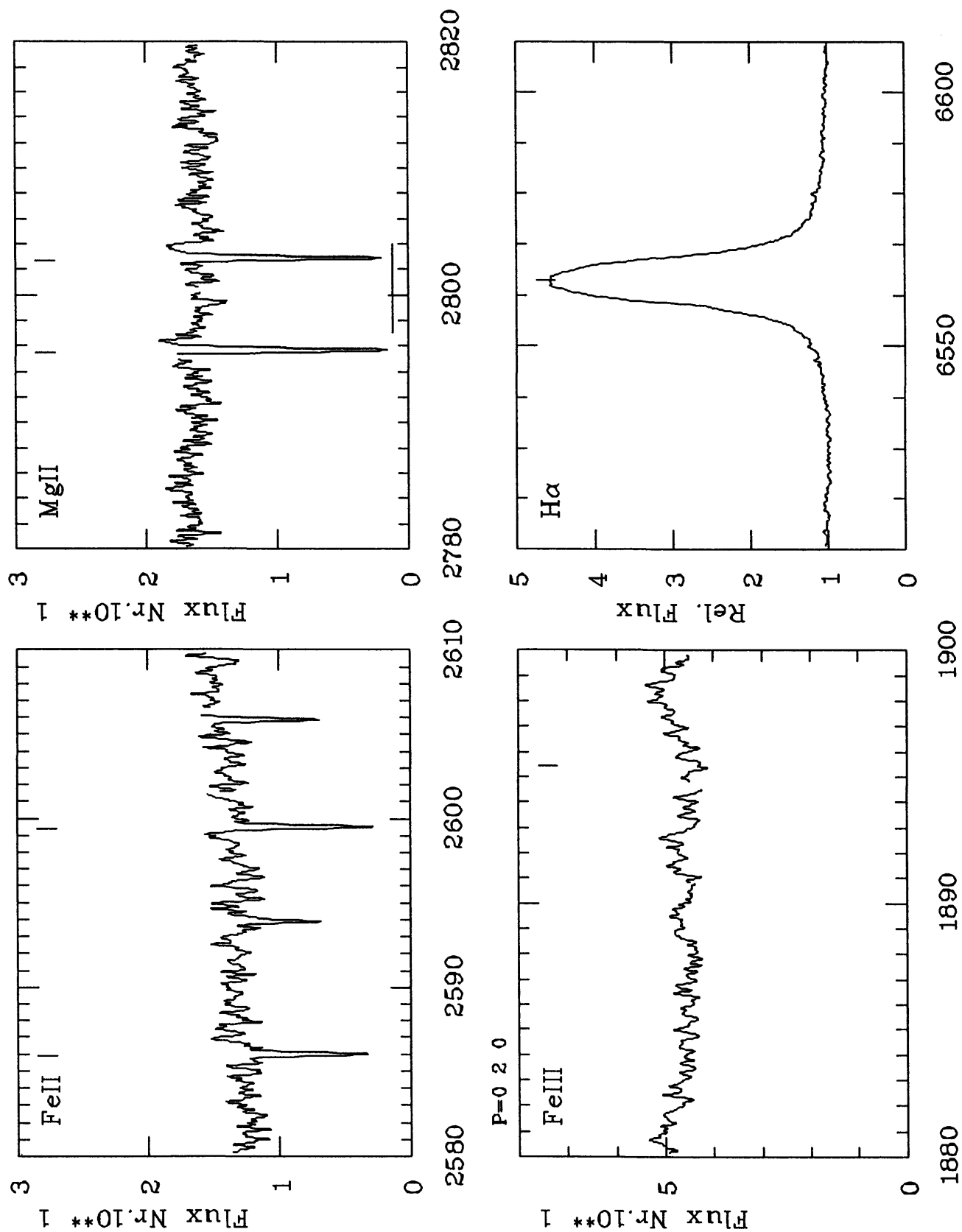
IUE 3 13759 L 81.04.20 - 3 28004 L 86.03.23

IUE 1 07844 L 86.03.21

ESO R F9247 88.04.07

HD 110432 B1IIIe

vsini 300



IUE 3 13759 L 81.04.20 - 3 28004 L 86.03.23

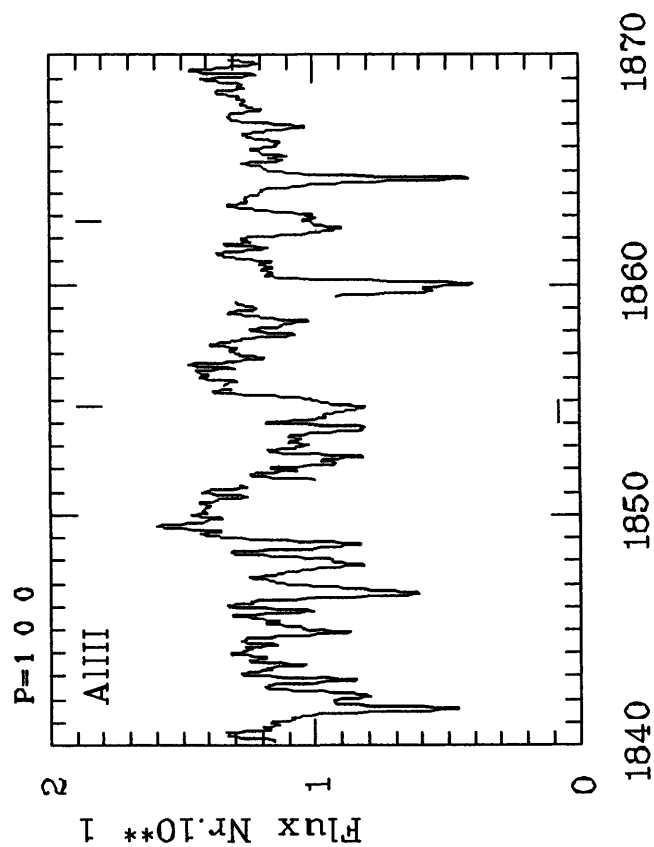
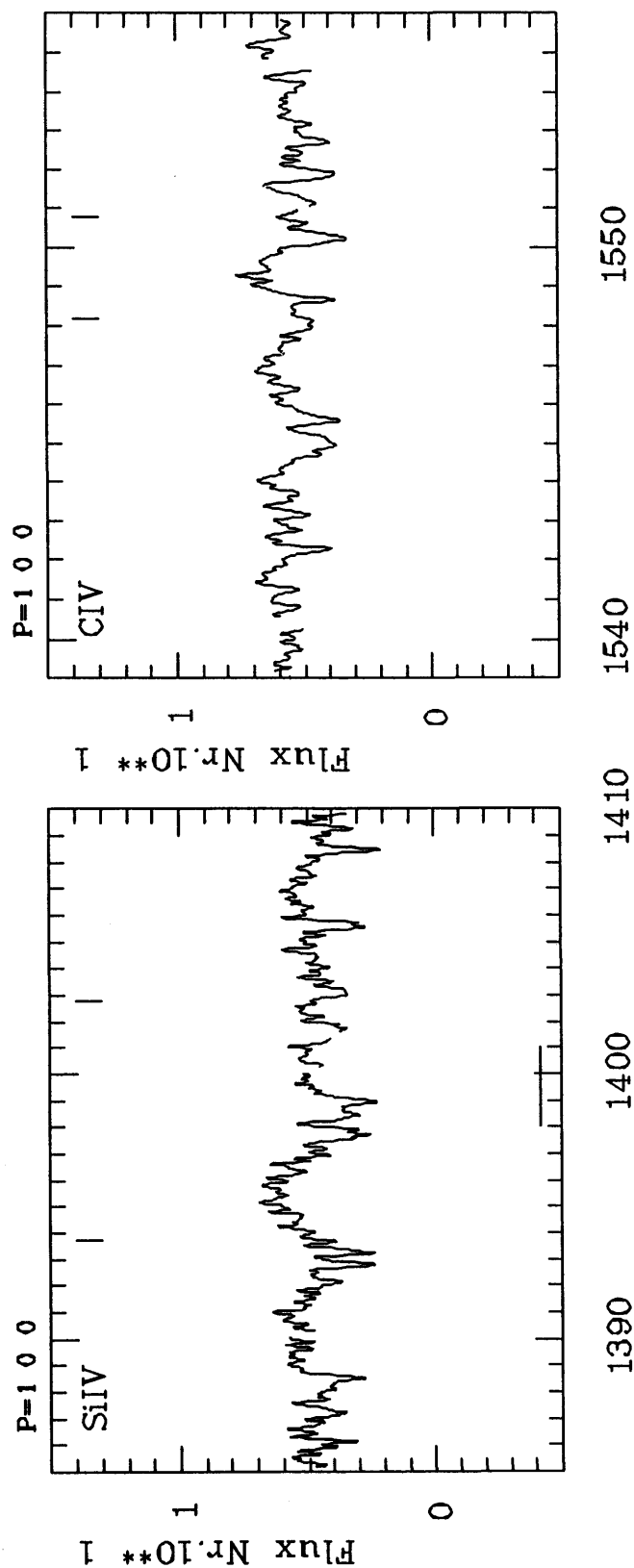
IUE 1 07844 L 86.03.21

ESO R F9247

88.04.07

HD 112028 A1IVsh

vsini 200



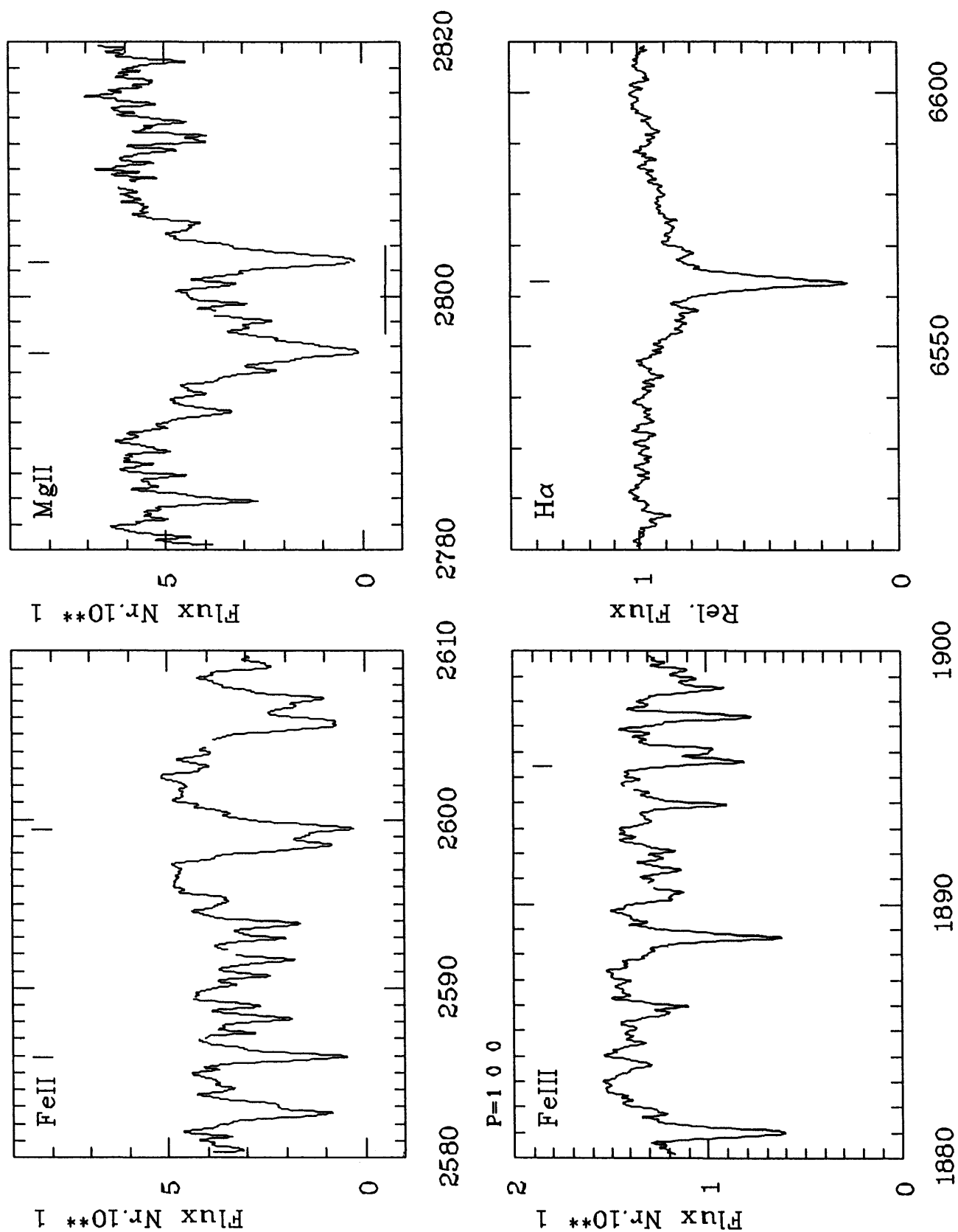
IUE 3 18822 L 82.12.19

IUE 2 14850 L 82.12.19

OHP R GA5695 83.12.13

HD 112028 A1IVsh

vsini 200



IUE 3 18822 L 82.12.19

IUE 2 14850 L 82.12.19

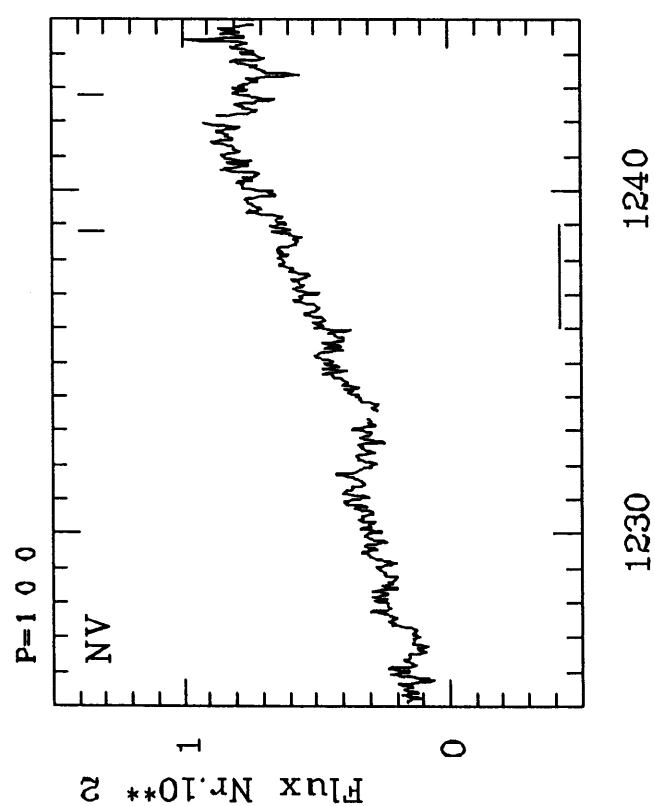
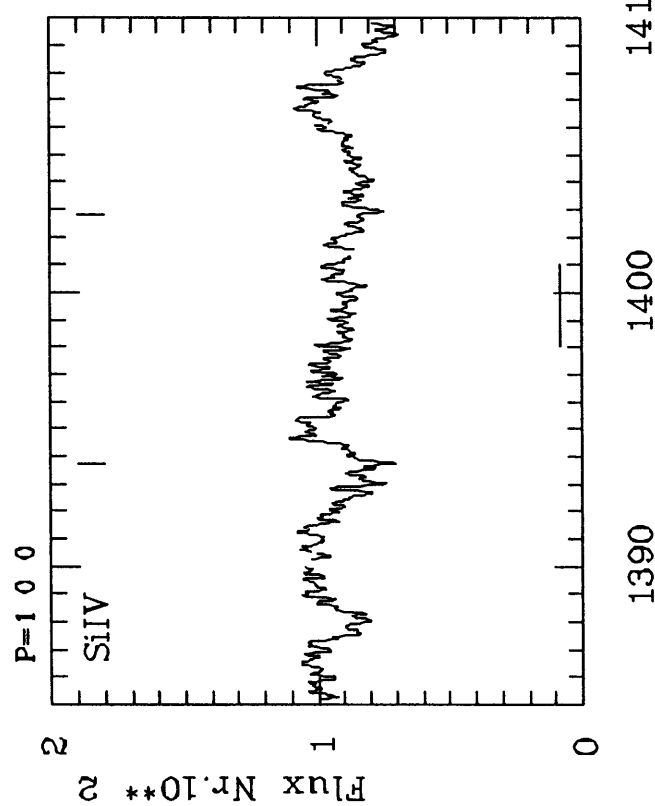
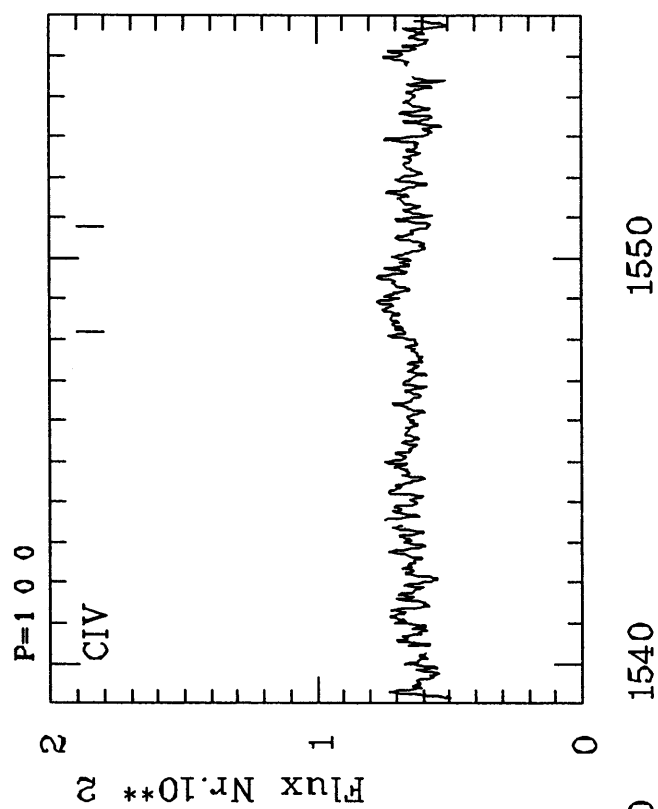
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OHP R GA5695 83.12.13



HD 112091 B5Ve

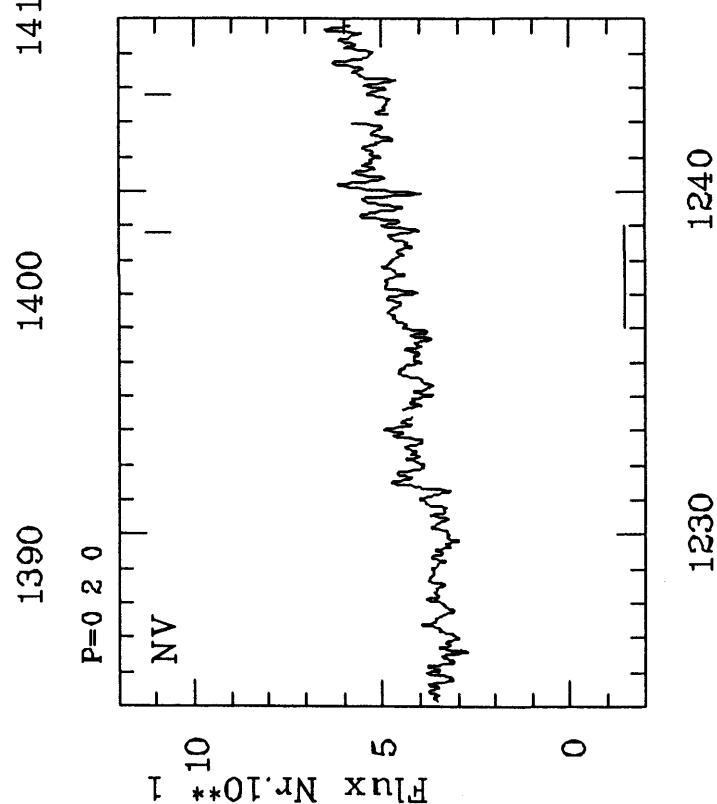
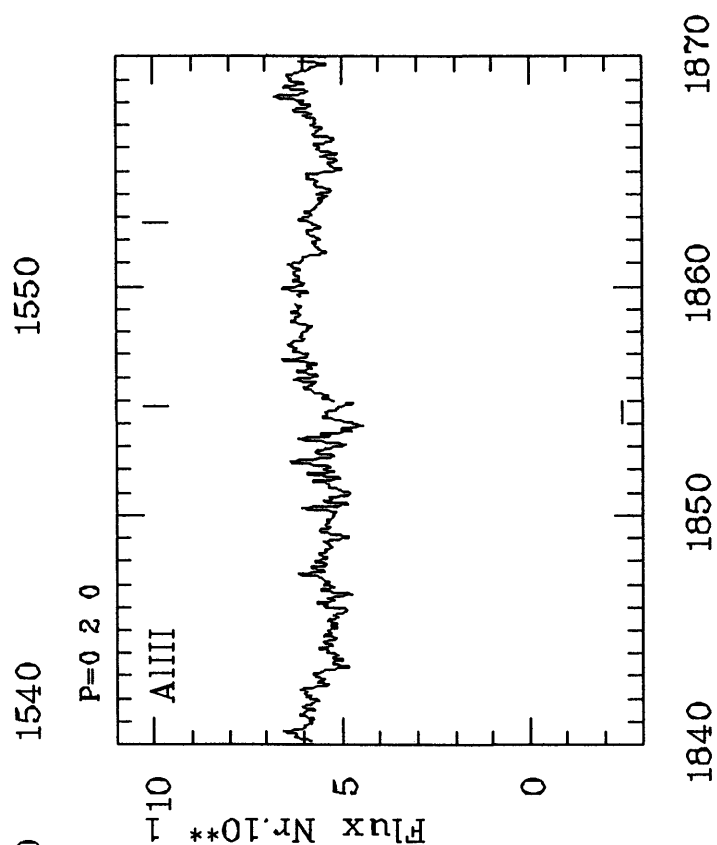
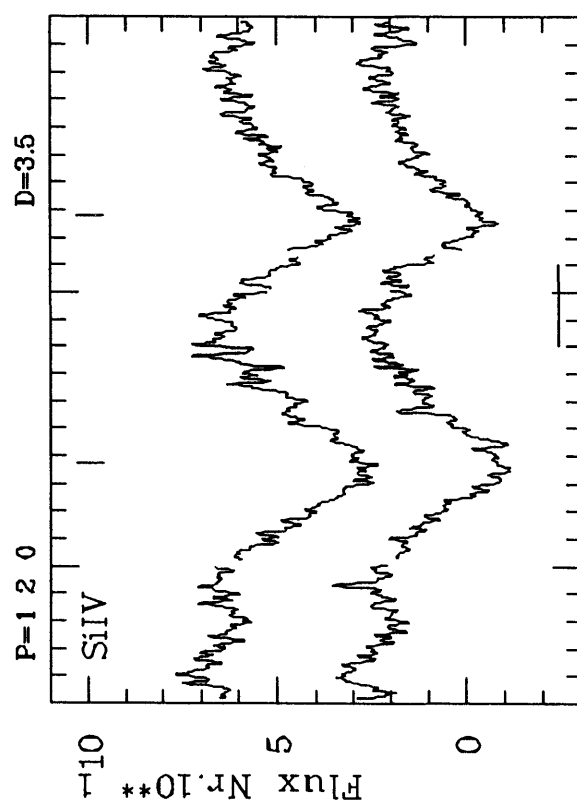
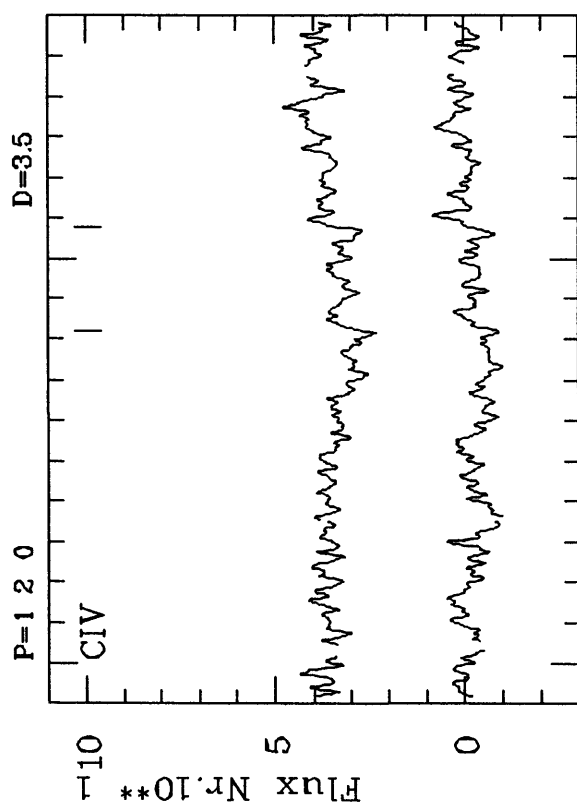
vsini 220



IUE 3 26125 L 85.06.08

HD 113120 B2IIIe

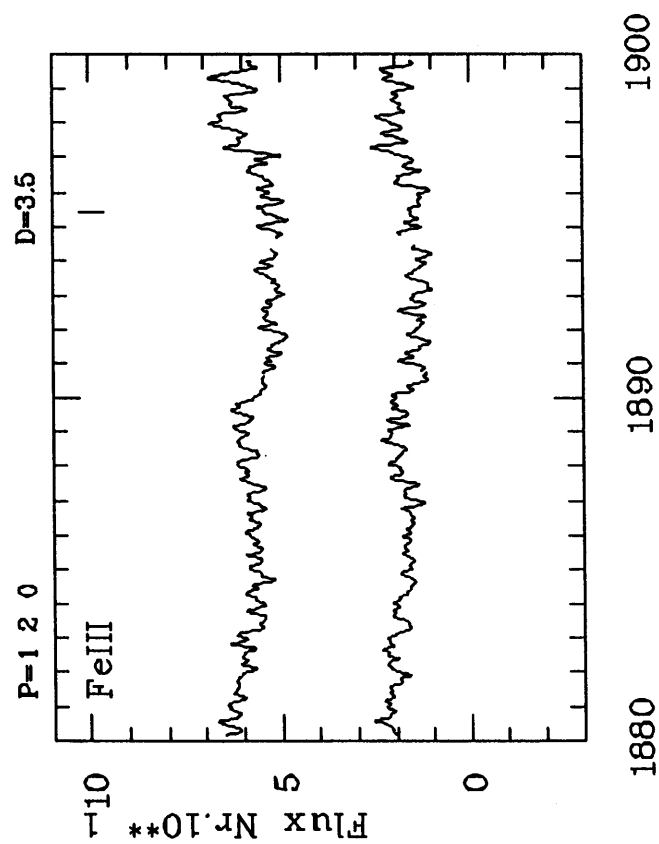
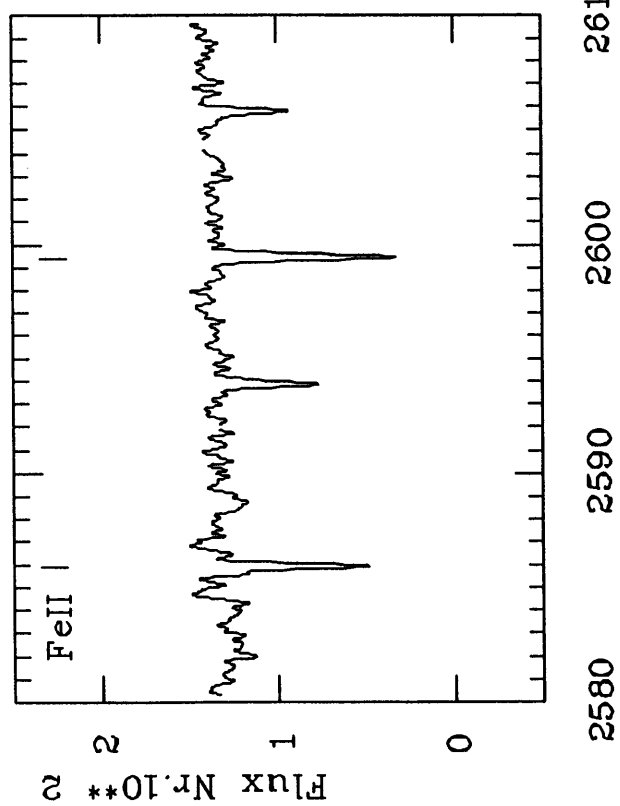
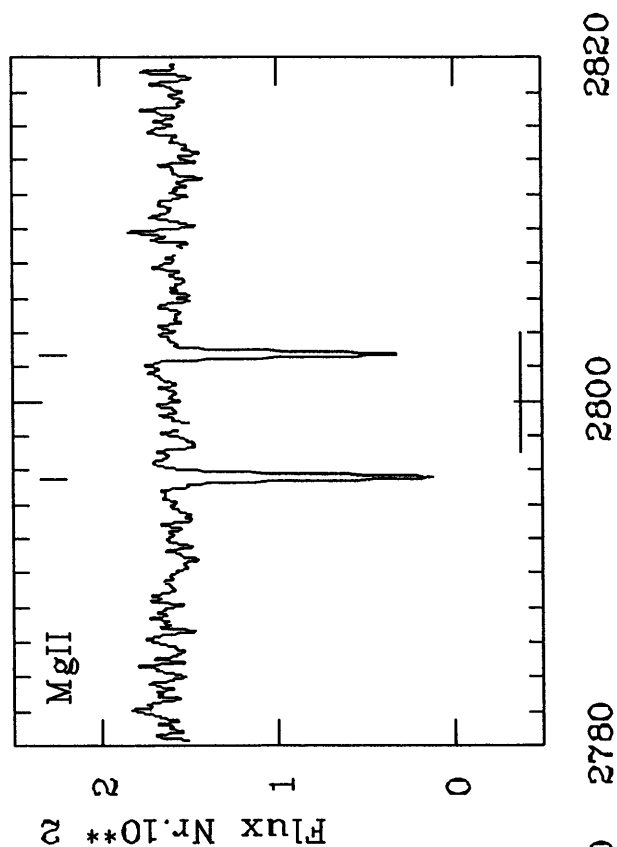
vsini 300



IUE 3 29397 L 86.10.07 - 3 30910 L 87.05.04
 IUE 2 16867 L 83.09.24

HD 113120 B2IIIe

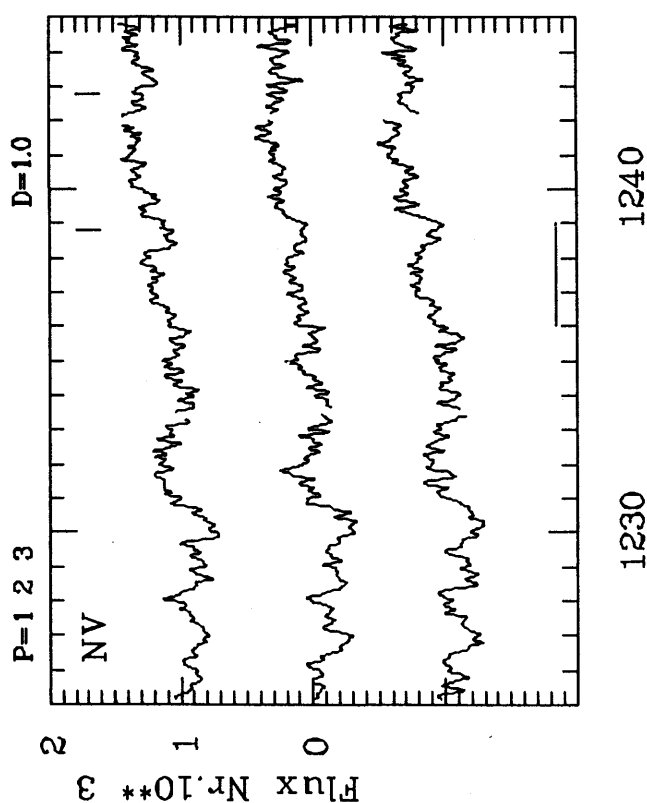
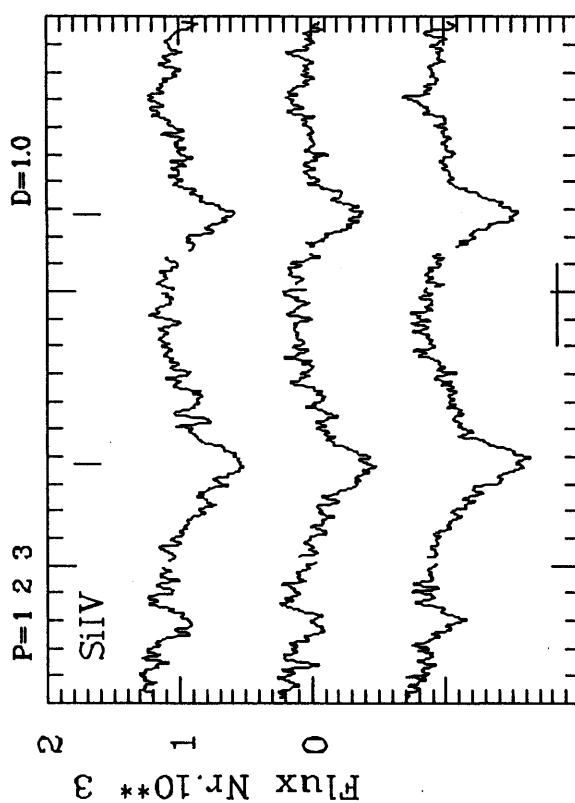
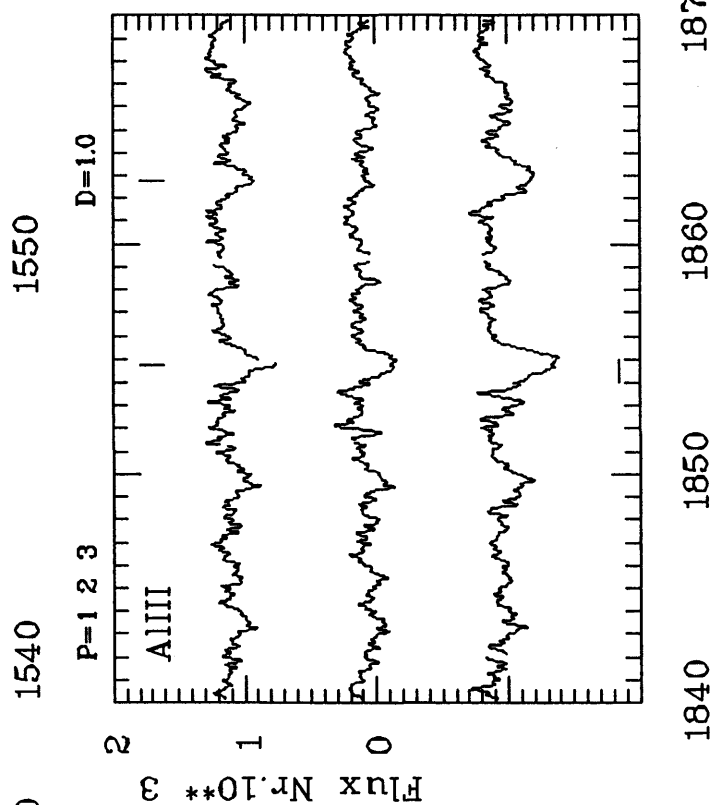
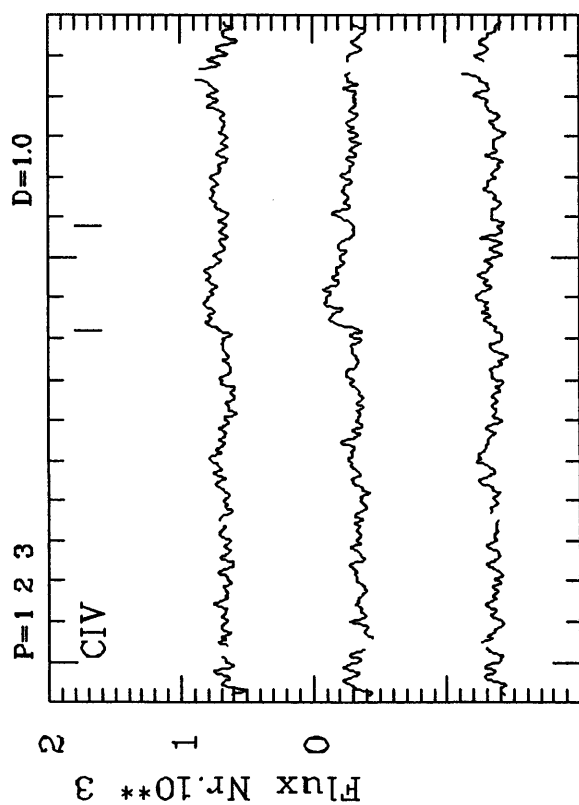
vsini 300



IUE 3 29397 L 86.10.07 - 3 30910 L 87.05.04
 IUE 2 16867 L 83.09.24

HD 120324 B2(IV-V)e

vsini 155

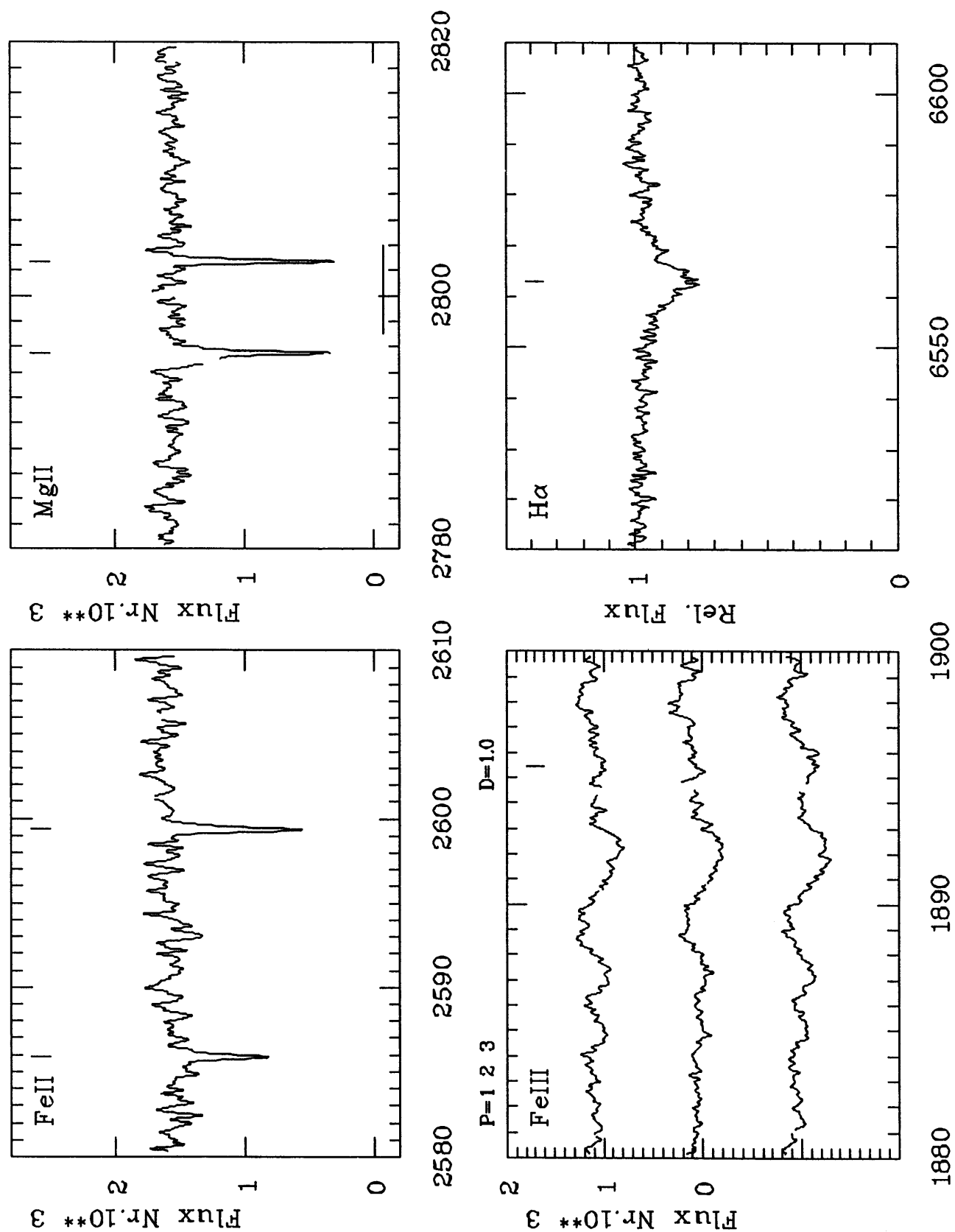


IUE 3 20872 L 83.09.01 - 3 25546 L 85.03.30 - 3 28218 L 86.04.22
 IUE 1 06292 L 85.06.28

ESO R F9267 88.04.09

HD 120324 B2(IV-V)e

vsini 155

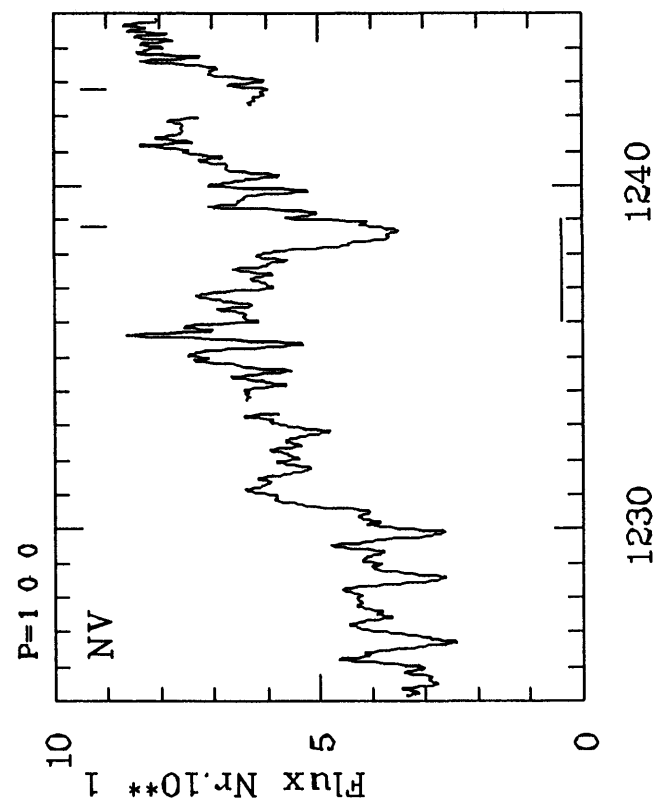
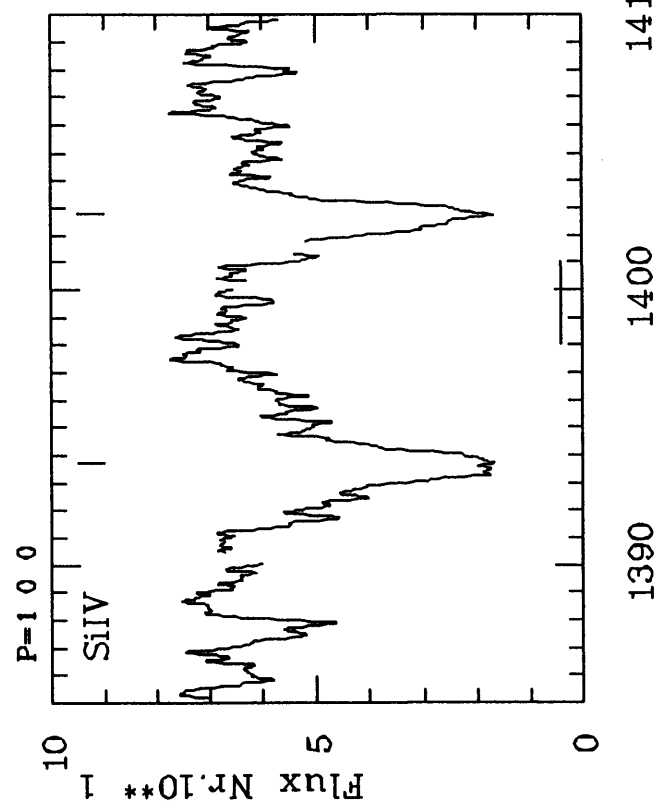
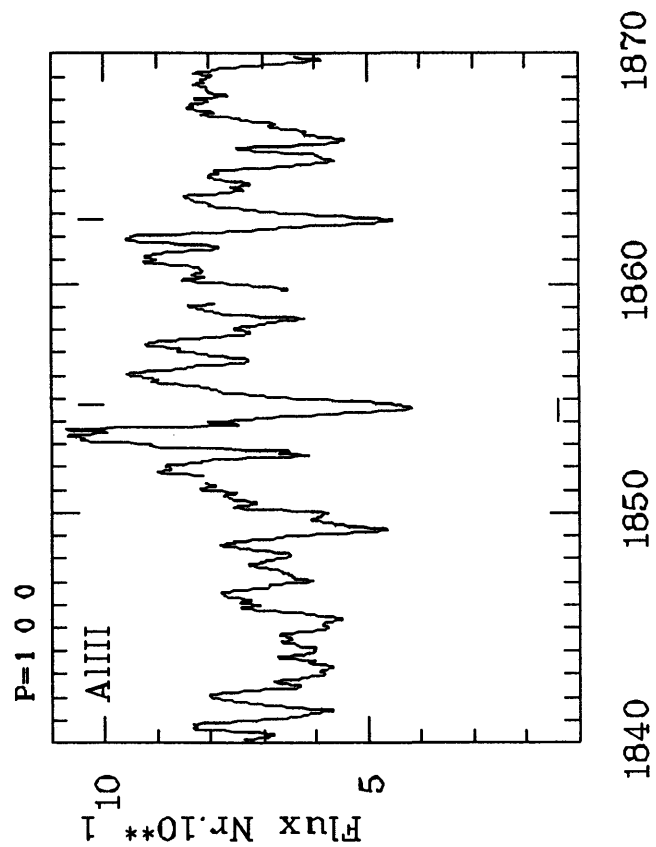
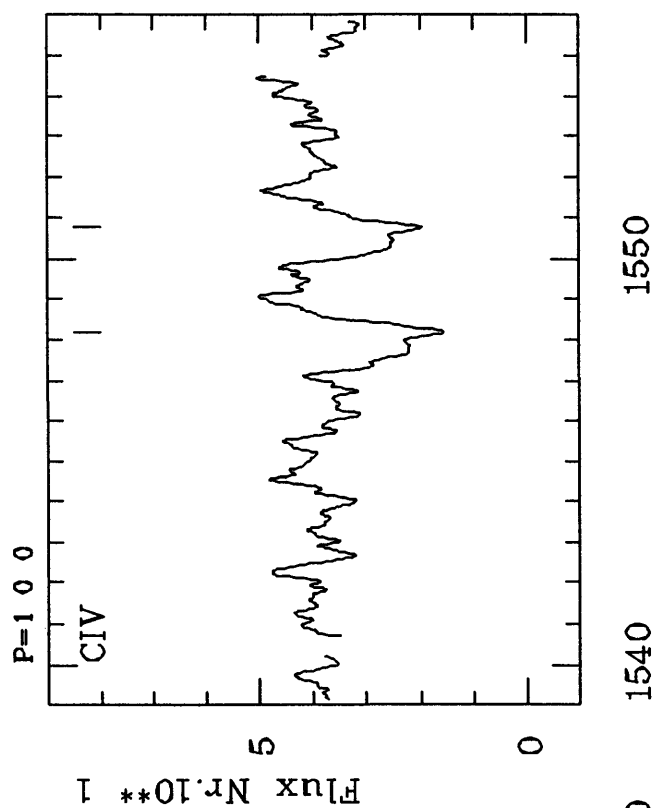


IUE 3 20872 L 83.09.01 - 3 25546 L 85.03.30 - 3 28218 L 86.04.22
 IUE 1 06292 L 85.06.28

ESO R F9267 88.04.09

HD 120991 B2IIIep

vsini 70



IUE 3 07752 L 80.01.23

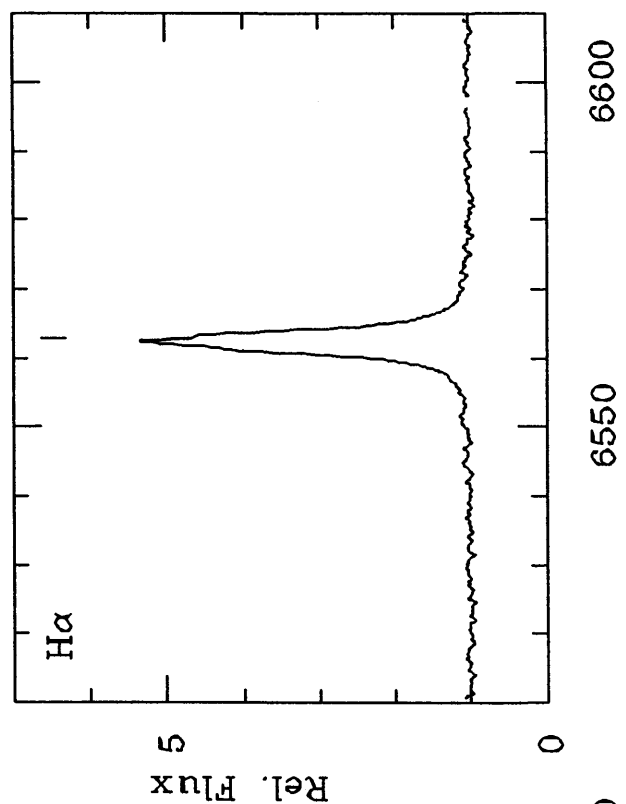
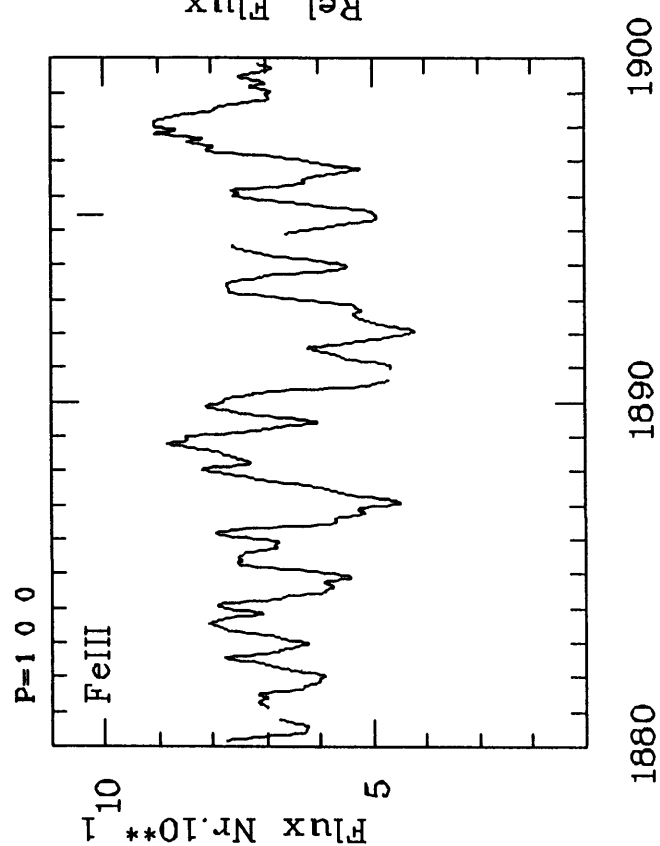
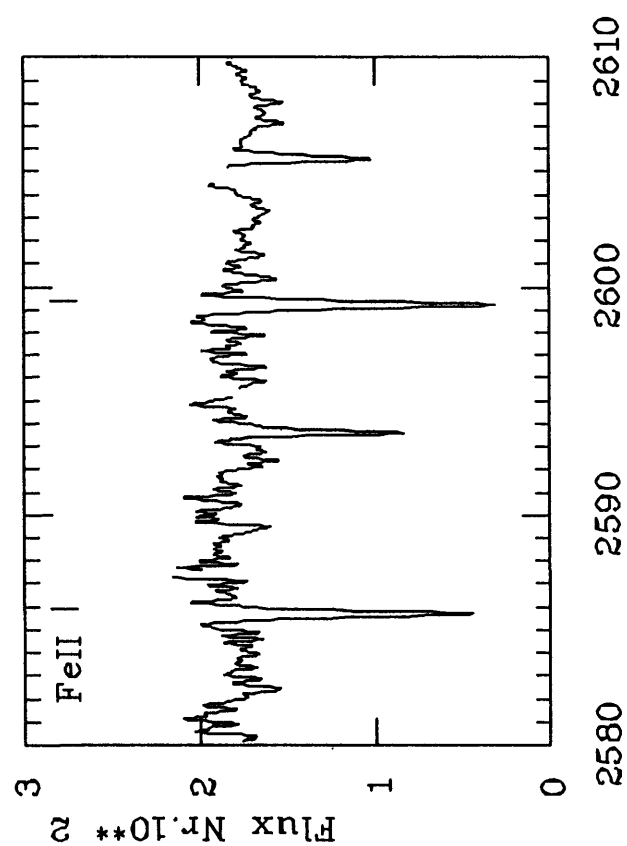
IUE 2 06743 L 80.01.23

ESO R F9249

88.04.07

HD 120991 B2IIIep

vsini 70



IUE 3 07752 L 80.01.23

IUE 2 06743 L 80.01.23

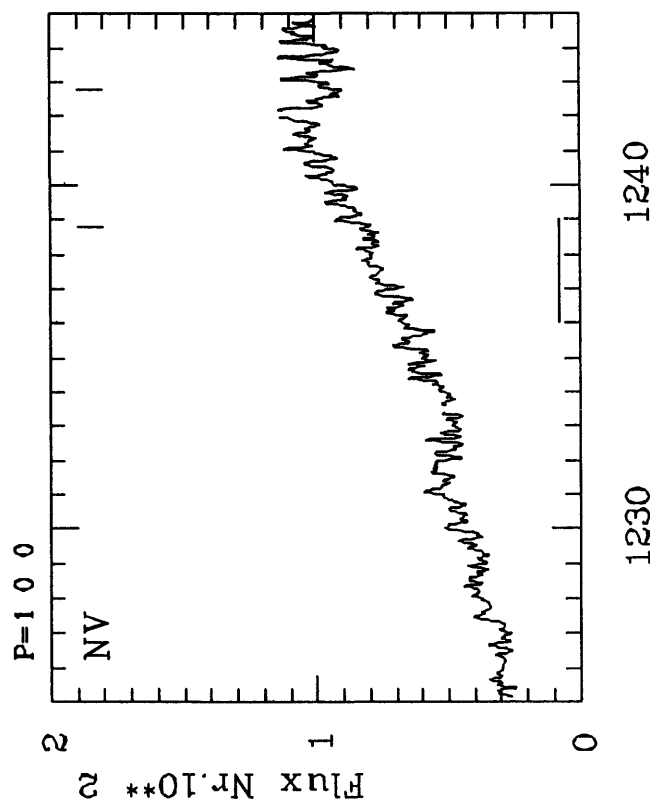
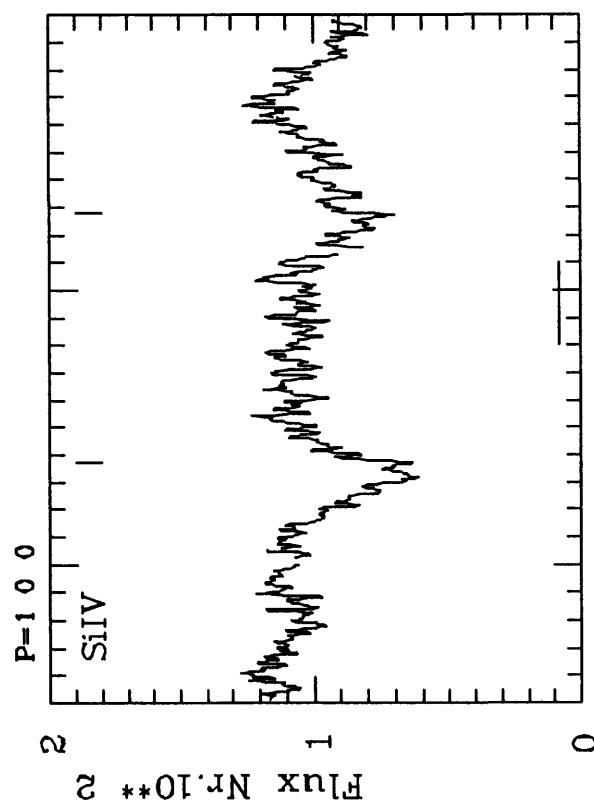
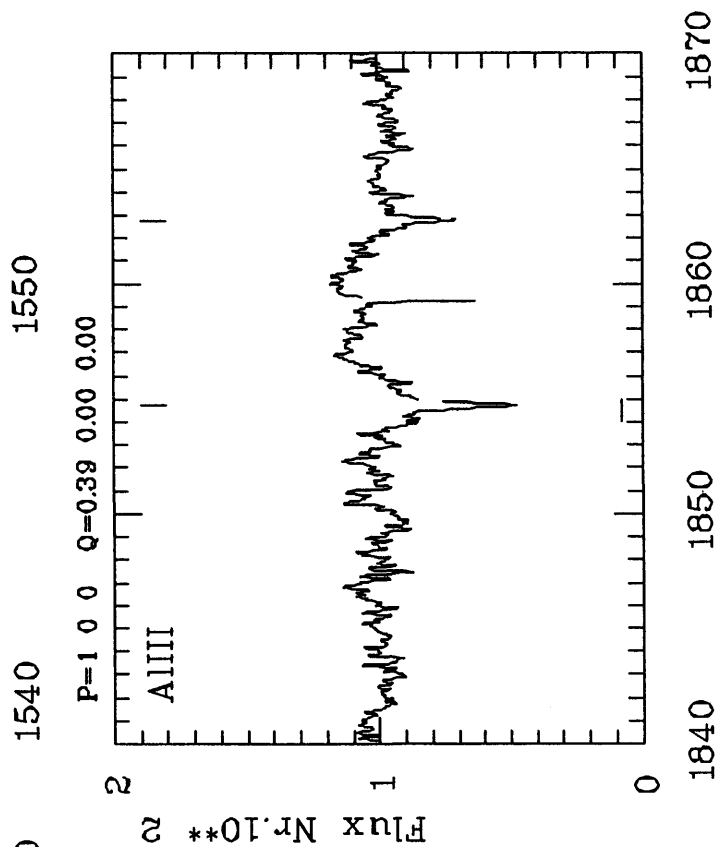
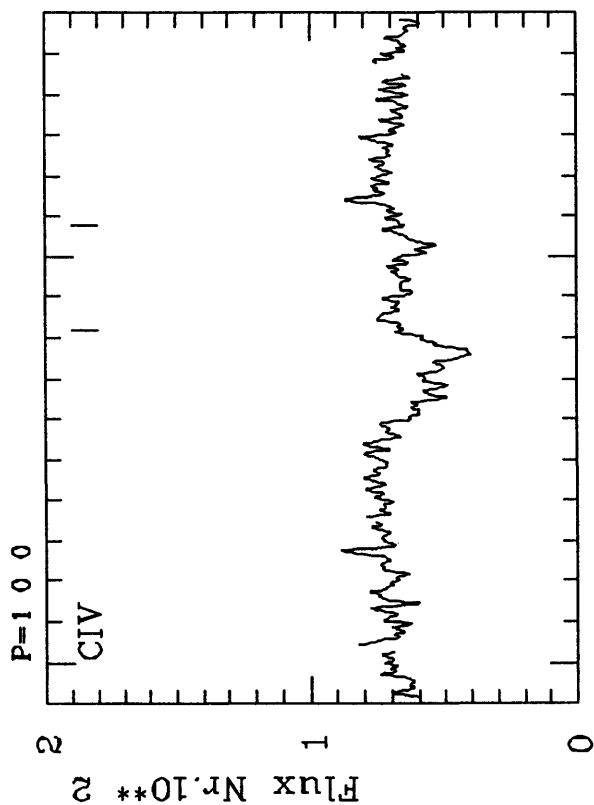
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ESO R F9249

88.04.07

HD 124367 B4Ve

vsini 300



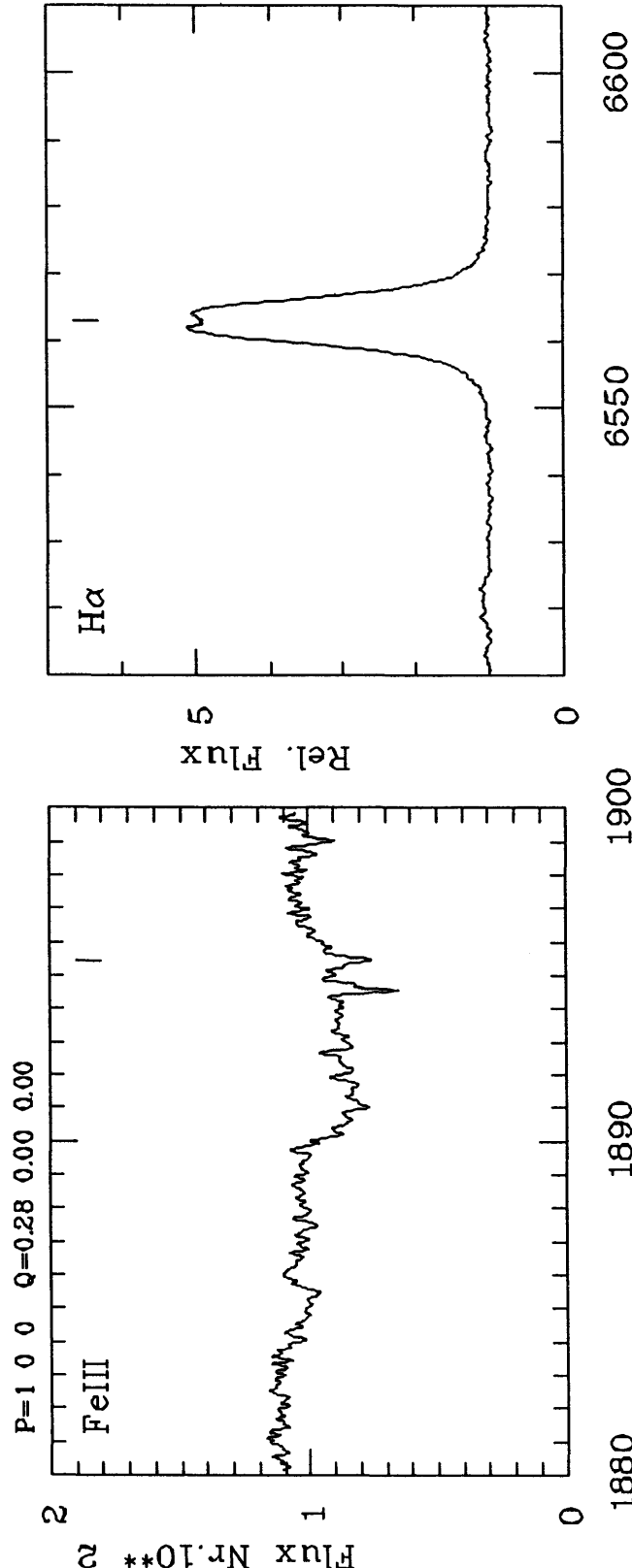
IUE 3 26126 L 85.06.08

ESO R F9250

88.04.07

HD 124367 B4Ve

vsini 300

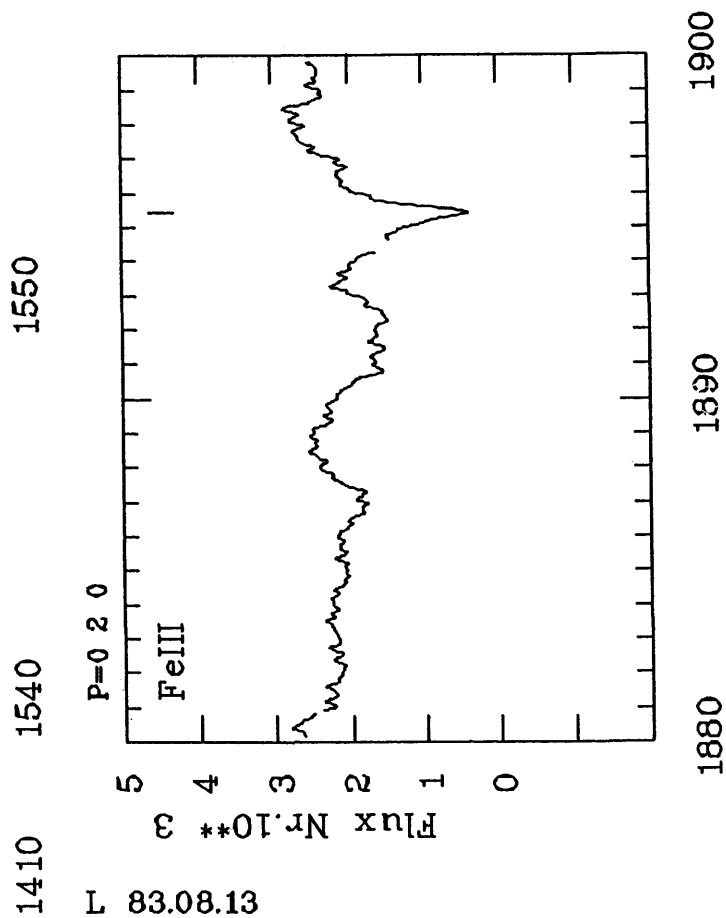
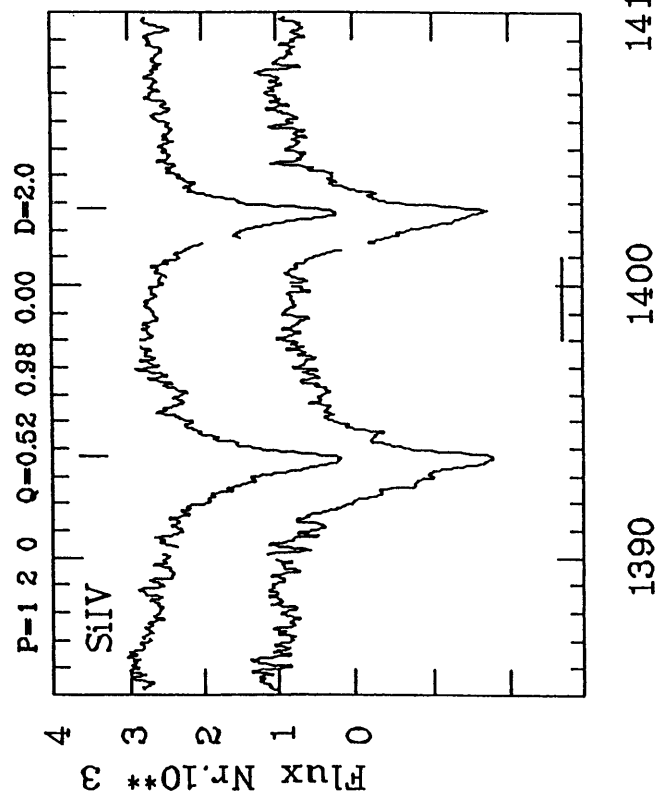
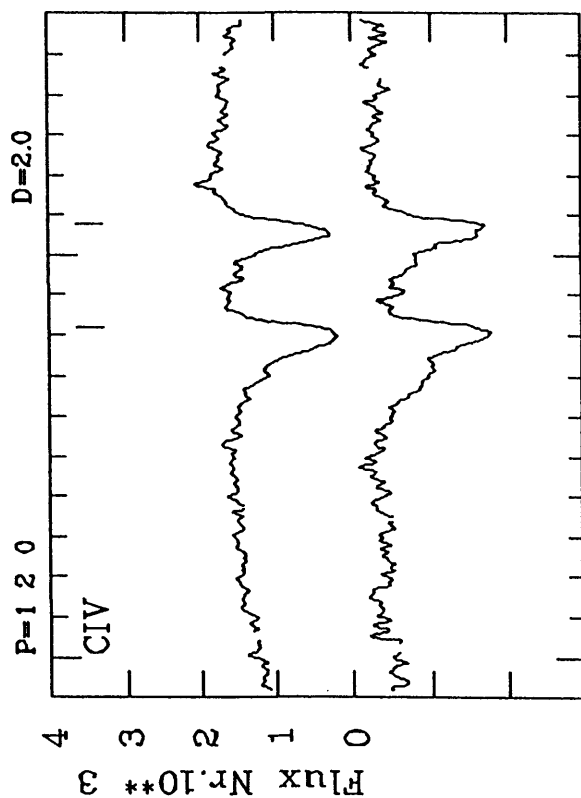


IUE 3 26126 L 85.06.08

ESO R F9250 88.04.07

HD 127972 B2IVe

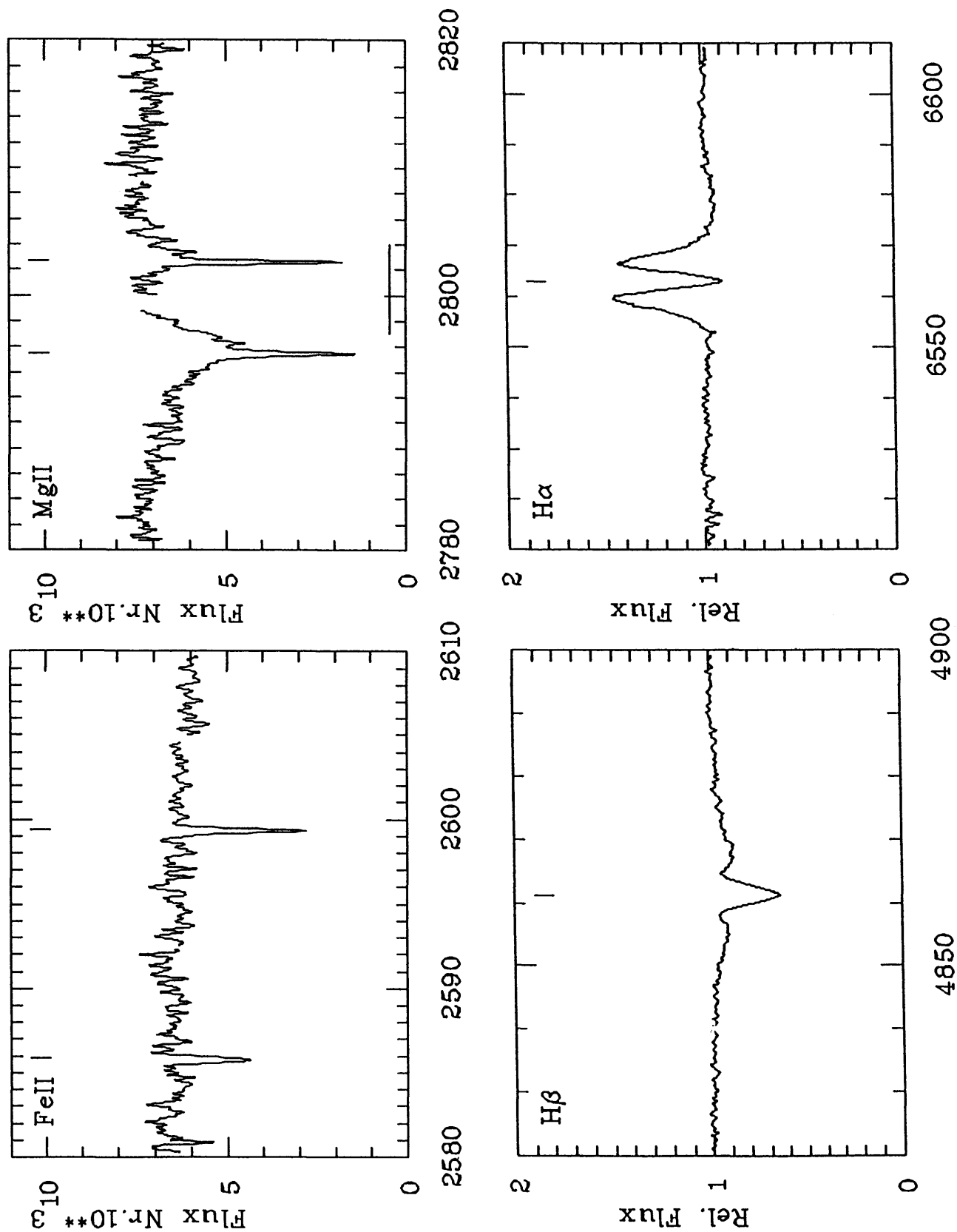
vsini 350



IUE 3 19257 L 83.02.15 - 3 20678 L 83.08.13
 IUE 2 12286 L 82.01.05
 ESO B G13785 88.04.09
 ESO R G13761 88.04.05

HD 127972 B2IVe

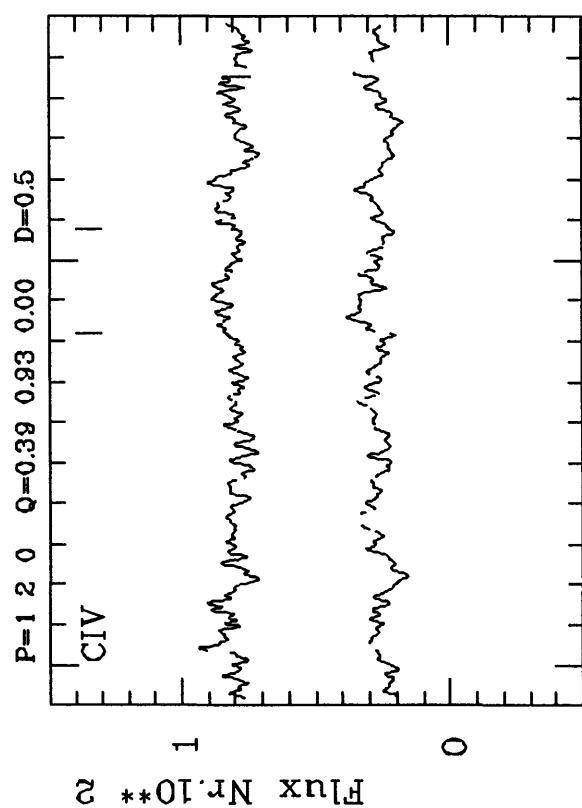
vsini 350



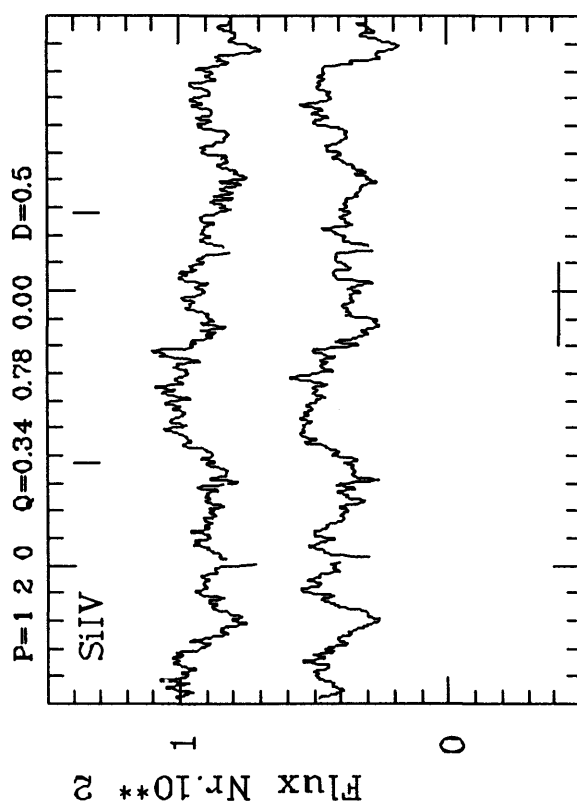
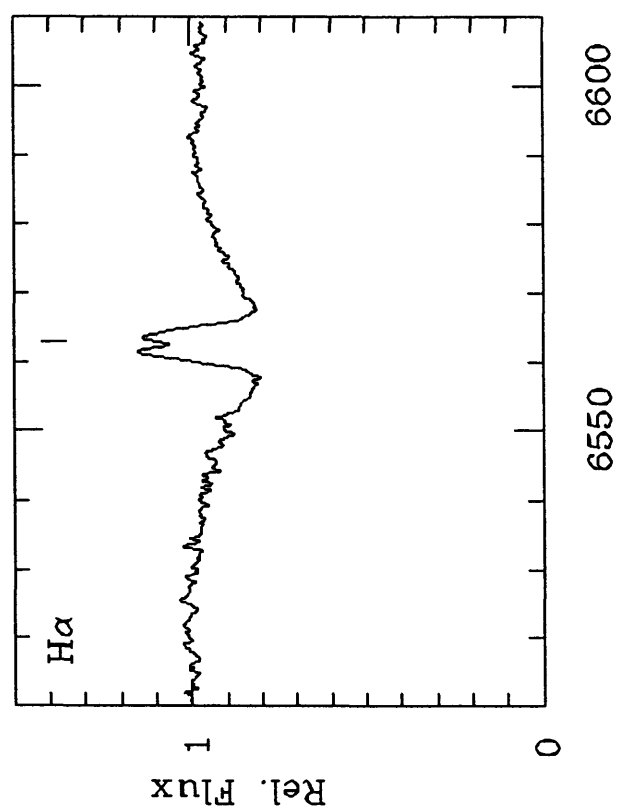
IUE 3 19257 L 83.02.15 - 3 20678 L 83.08.13
 IUE 2 12286 L 82.01.05
 ESO B G13785 88.04.09
 ESO R G13761 88.04.05

HD 134481 B9Ve

vsini 160



1540 1550



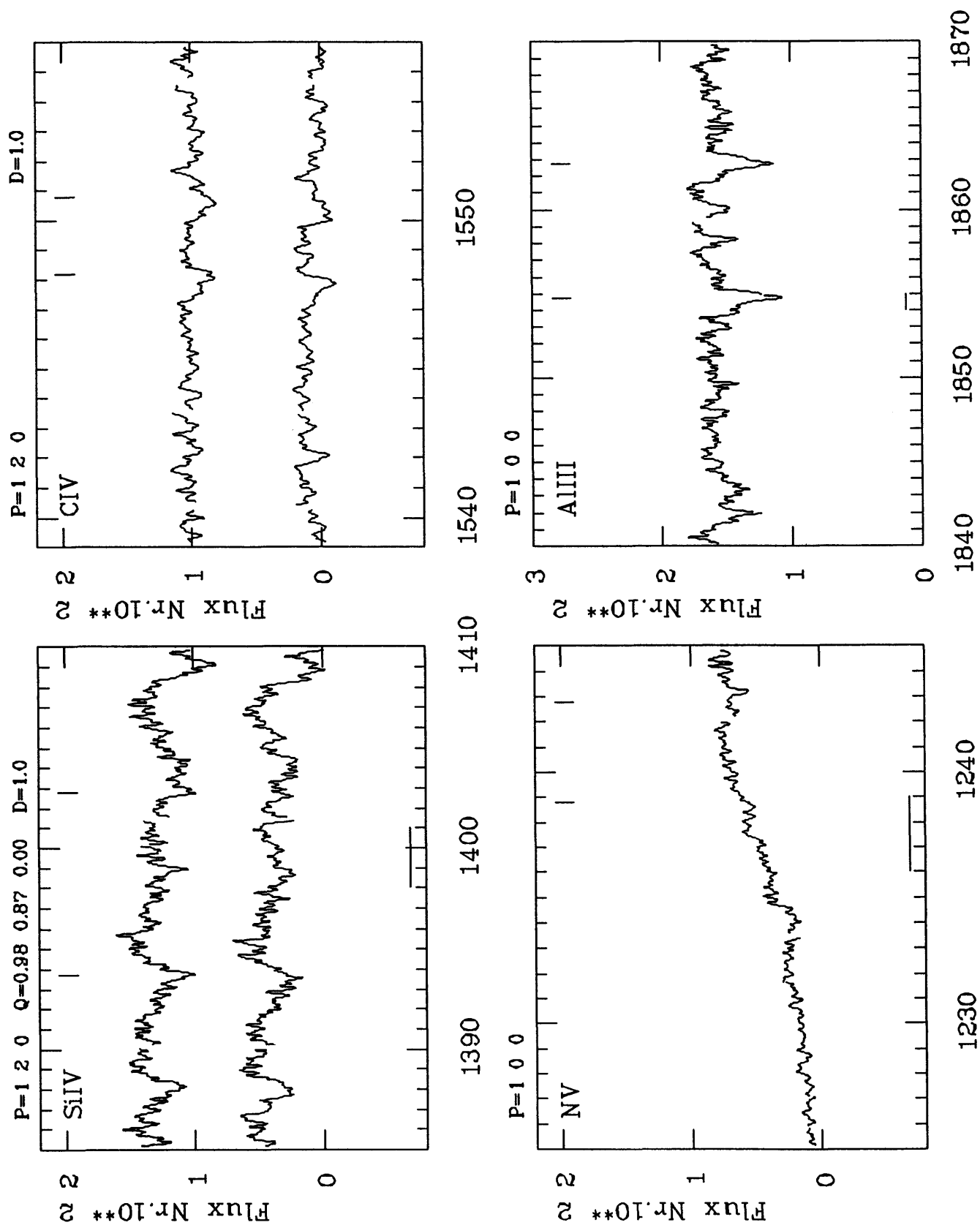
1390 1400 1410

IUE 3 26127 L 85.06.08 - 3 28116 L 86.04.06

ESO R G13780 88.04.08

HD 135734 B8Ve-comp

vsini 150/60

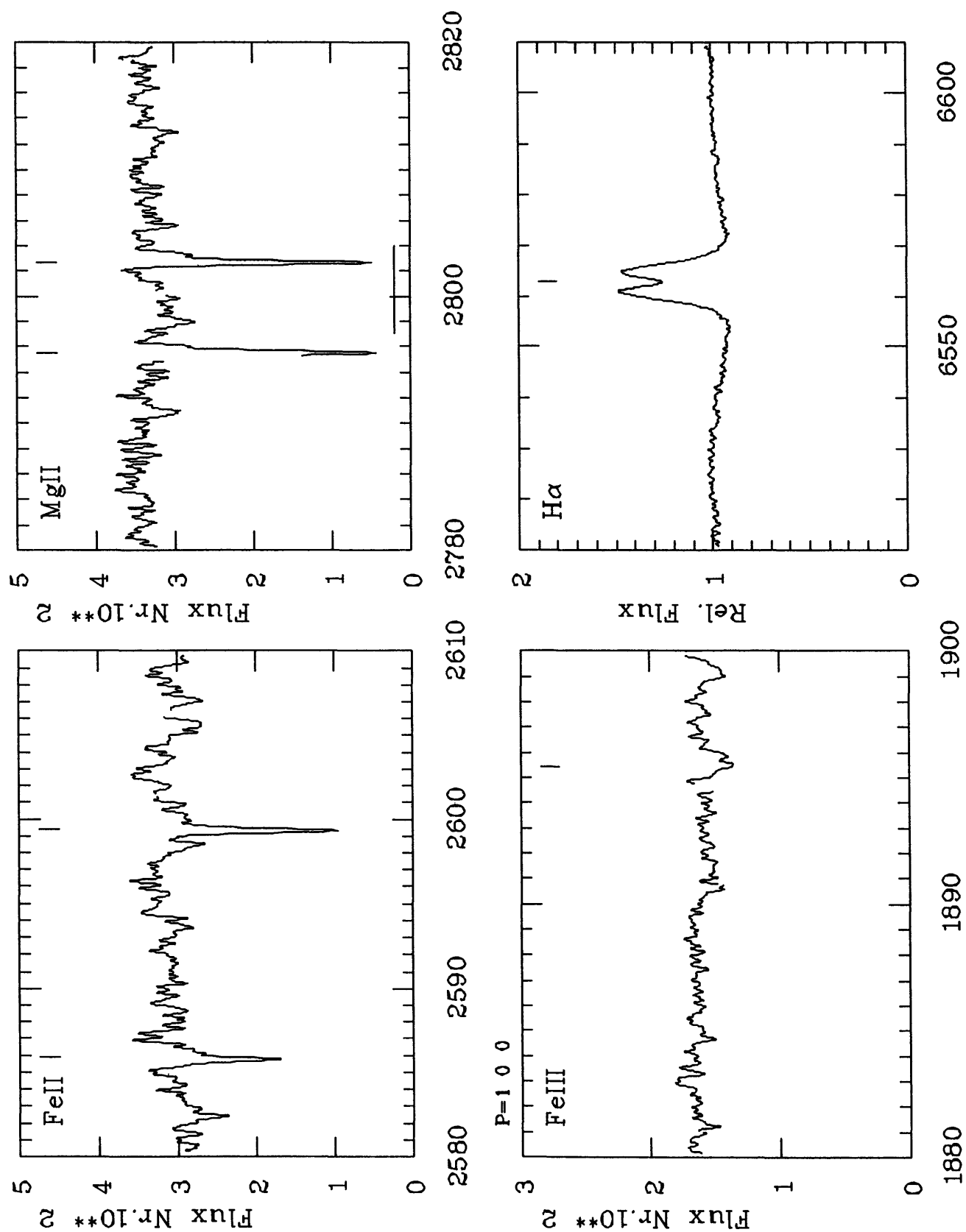


IUE 3 25959 L 85.05.16 - 3 26128 L 85.06.08
 IUE 1 05995 L 85.05.16

ESO R G13769 88.04.06

HD 135734 B8Ve-comp

vsini 150/60



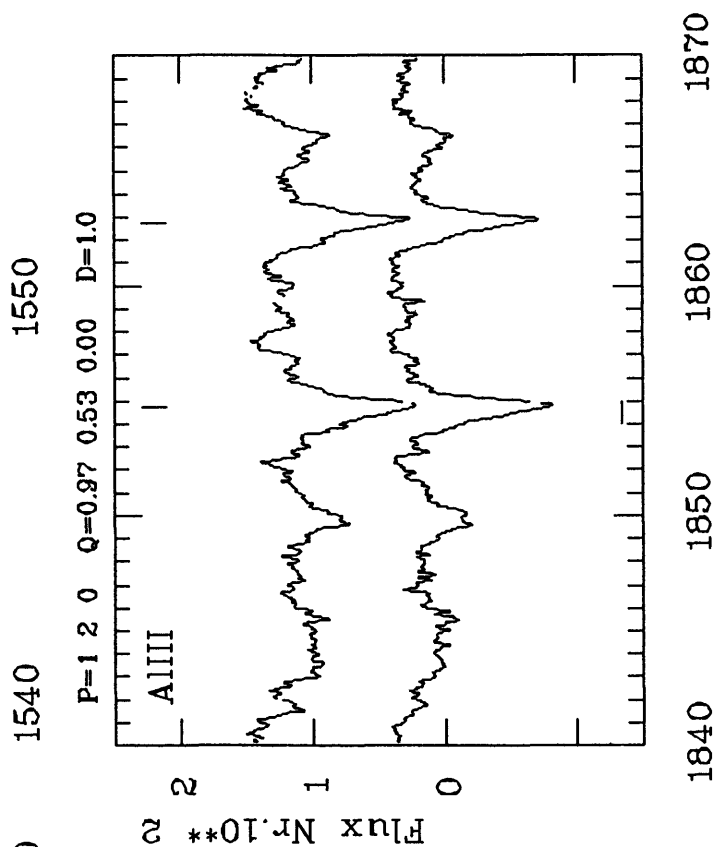
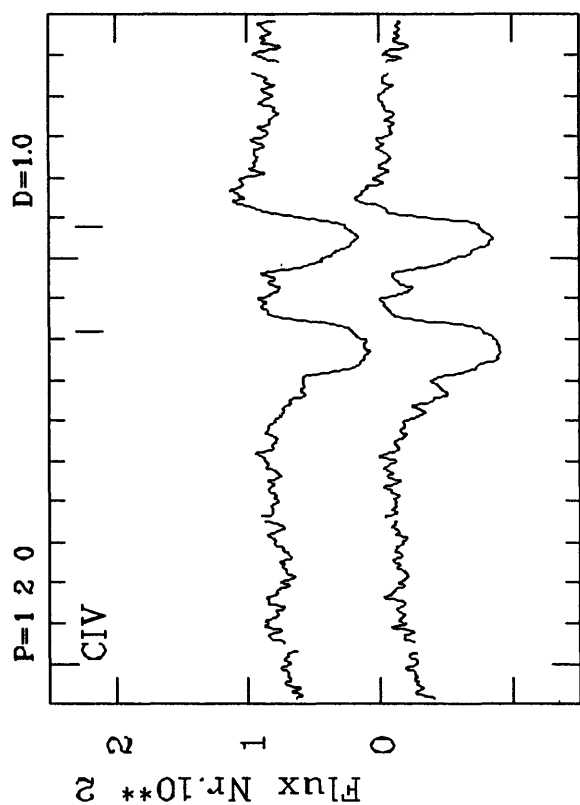
IUE 3 25959 L 85.05.16 - 3 26128 L 85.06.08

IUE 1 05995 L 85.05.16

ESO R G13769 88.04.06

HD 137387 B3IVe-2sp?

vsini 250+350

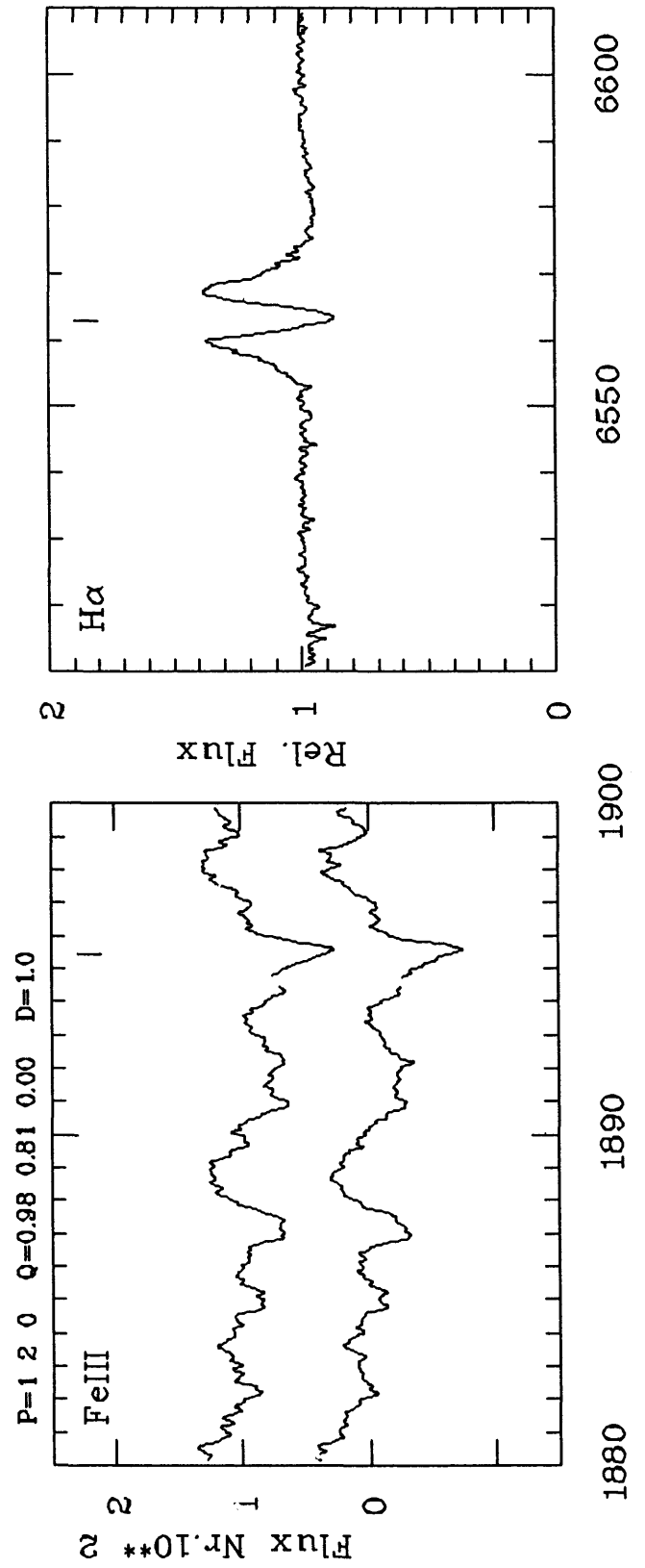


IUE 3 26120 L 85.06.08 - 3 26129 L 85.06.08

ESO R G13762 88.04.05

HD 137387 B3IVe-2sp?

vsini 250+350



IUE 3 26120 L 85.06.08 - 3 26129 L 85.06.08

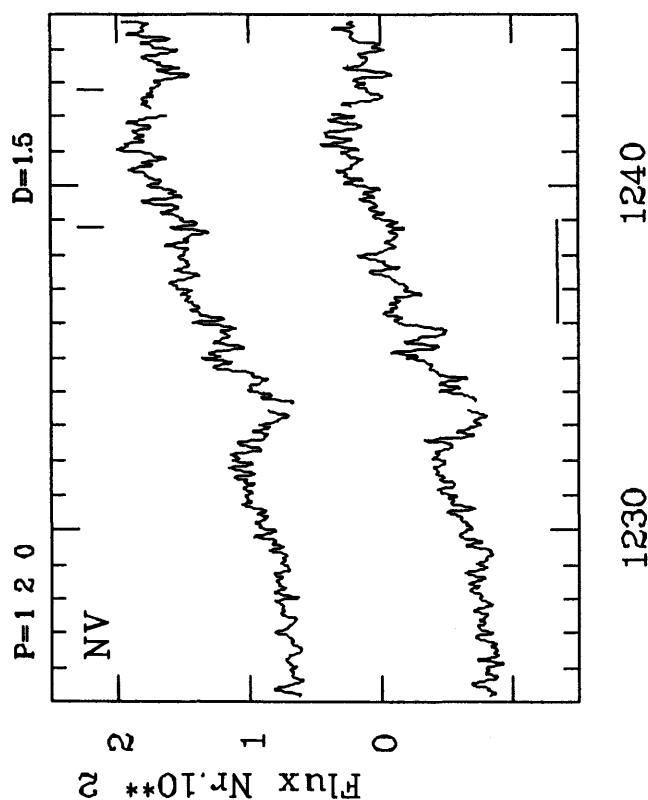
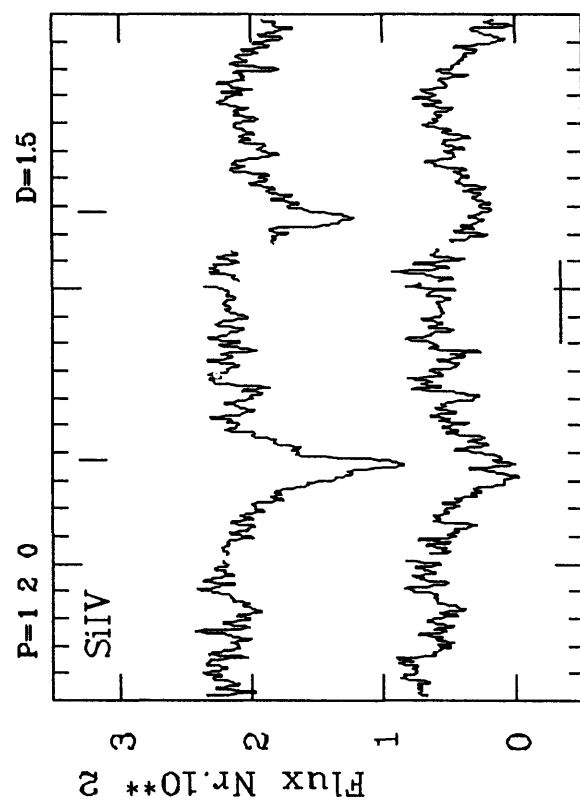
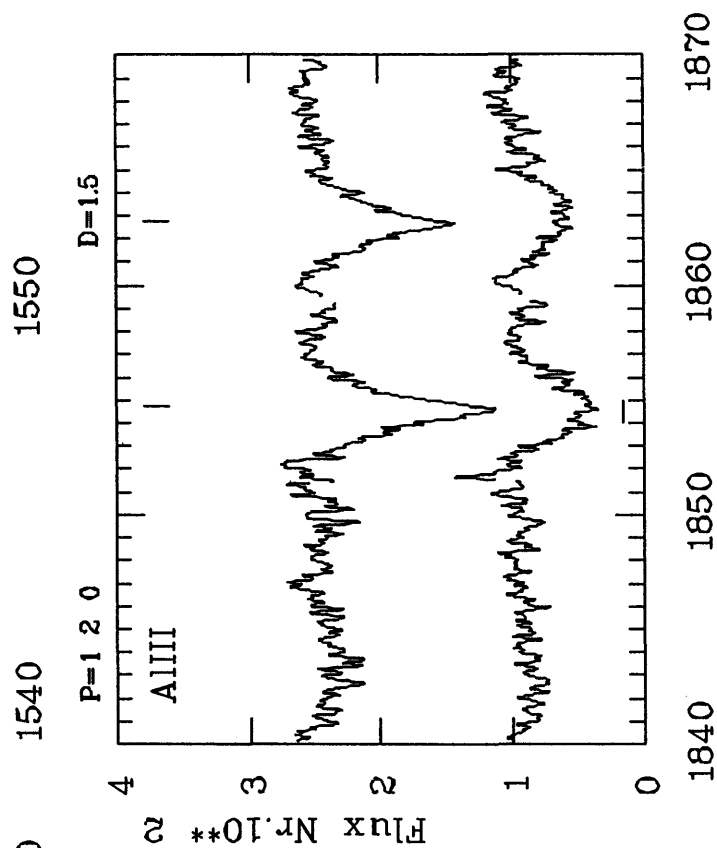
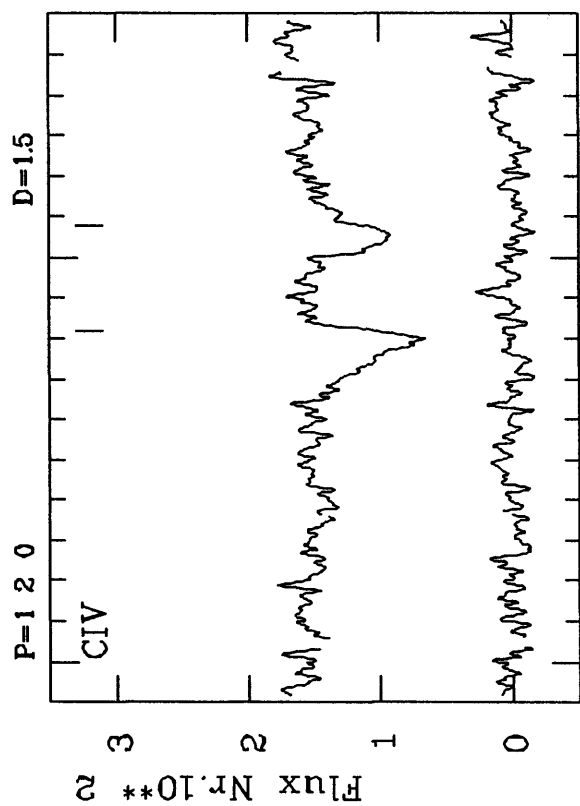
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ESO R G13762 88.04.05

HD 138749 B6IIIe

vsini 320



IUE 3 21770 L 83.12.14 - 3 25462 L 85.03.16

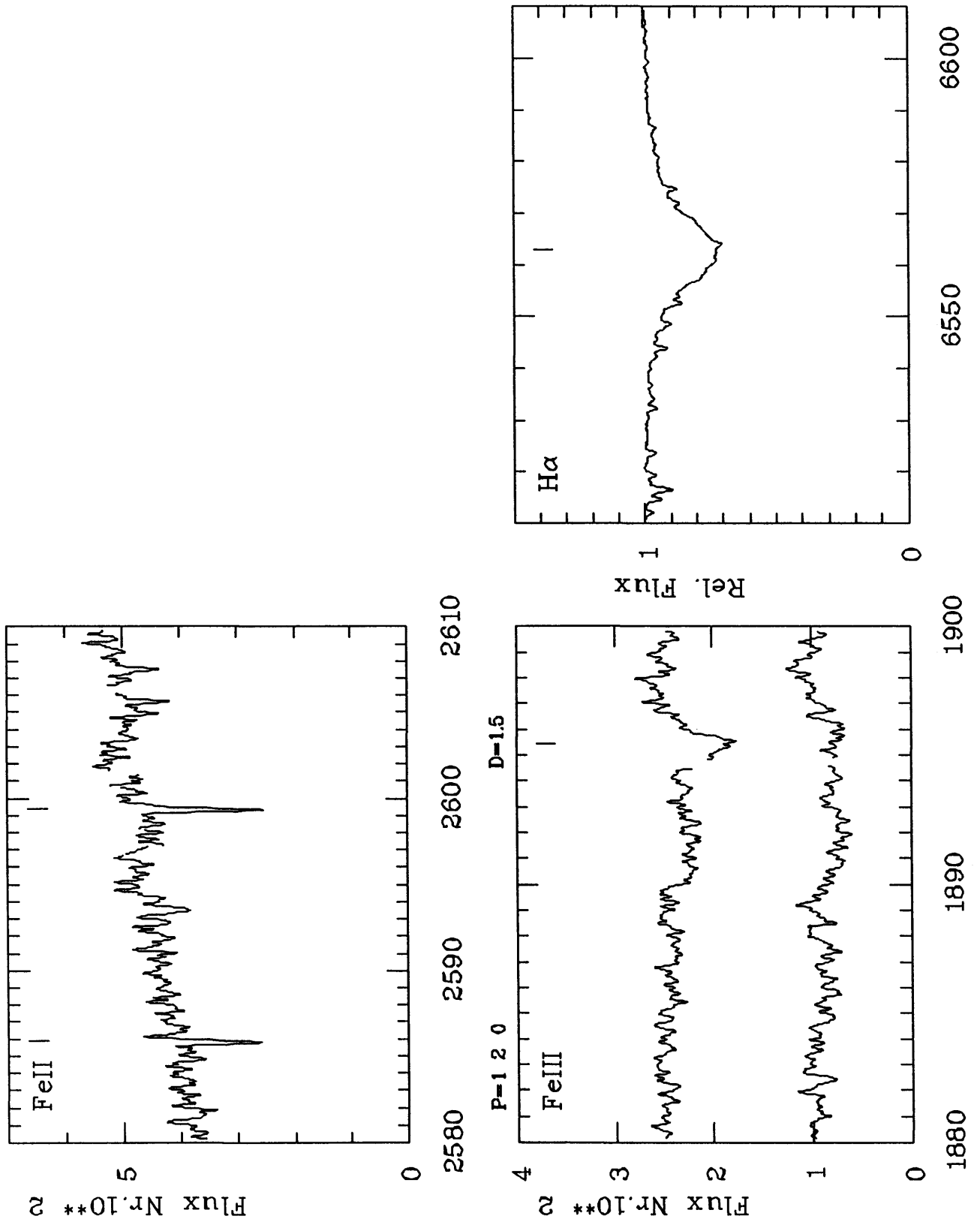
IUE 1 02412 L 83.12.14

OHP R CCD6

88.03.19

HD 138749 B6IIIe

vsini 320



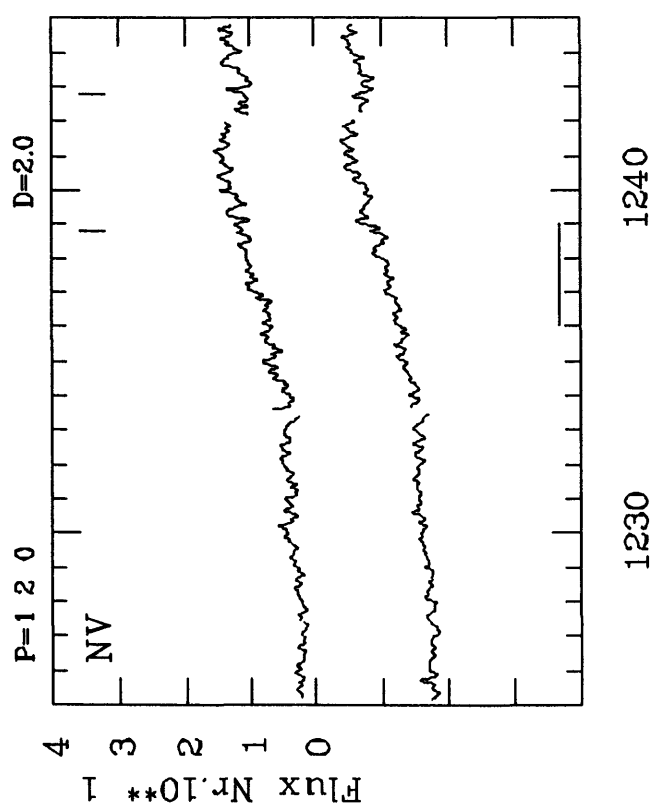
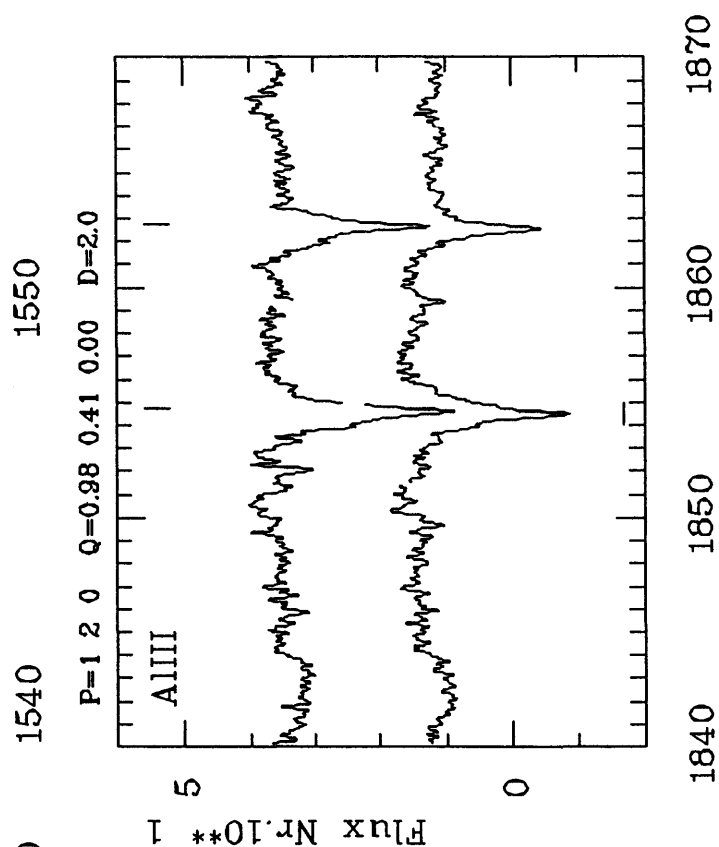
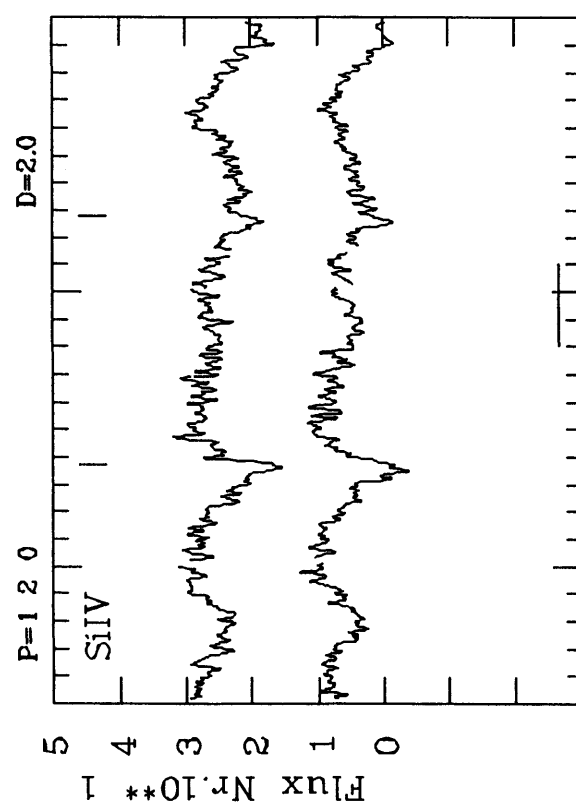
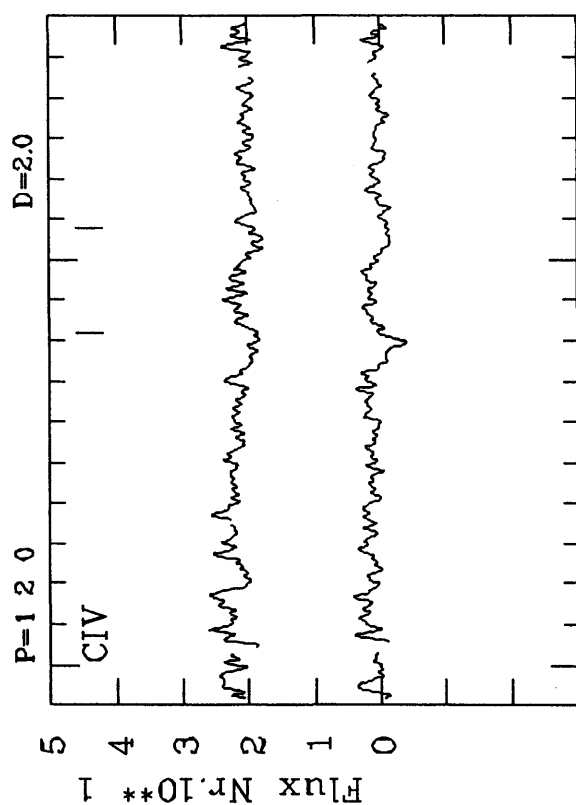
IUE 3 21770 L 83.12.14 - 3 25462 L 85.03.16
IUE 1 02412 L 83.12.14

OHP R CCD6

88.03.19

HD 142926 B7IVesh

vsini 300



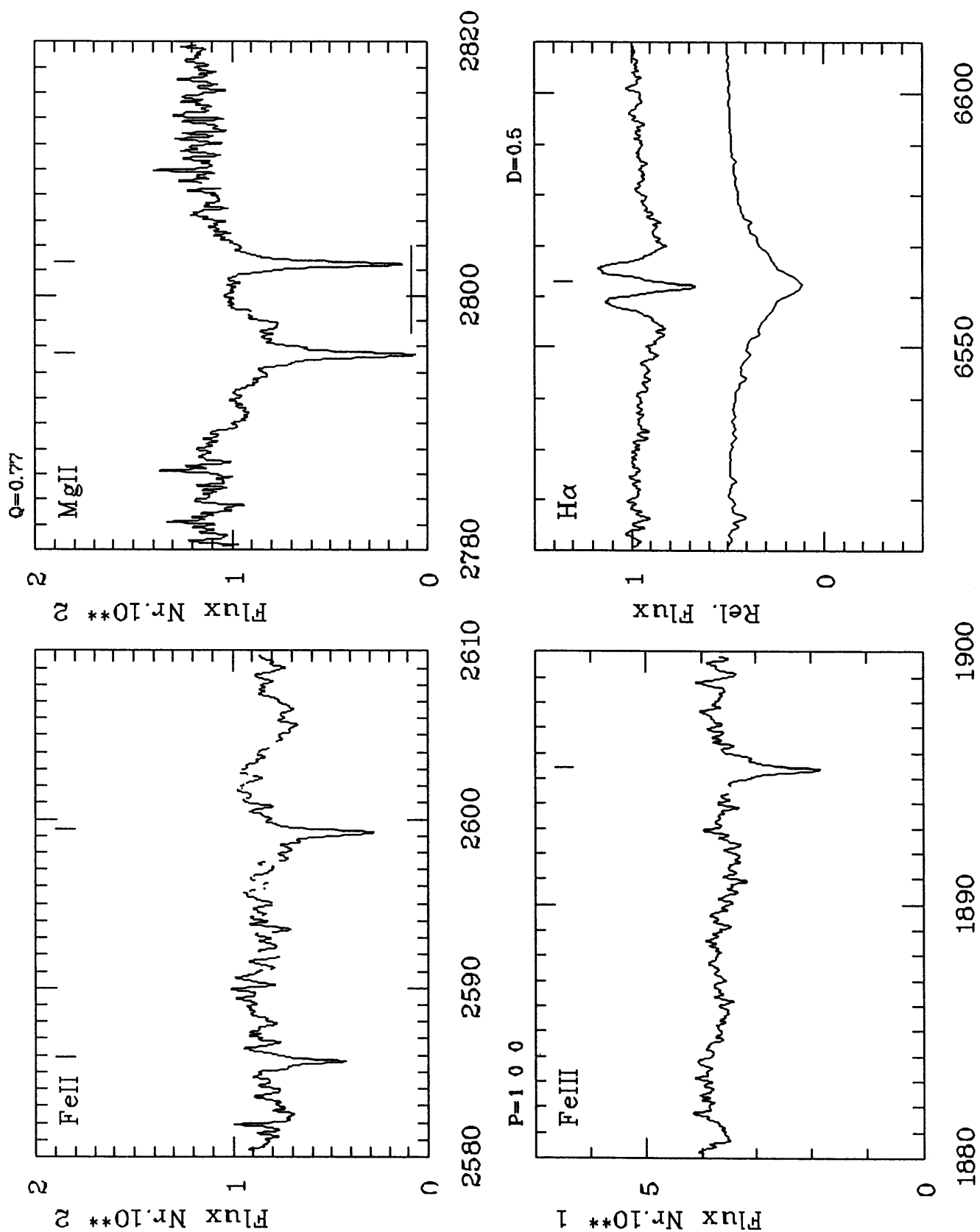
IUE 3 21151 L 83.09.24 - 3 27509 L 86.01.11

IUE 2 16864 L 83.09.24

OHP R GA5208 82.05.05 - OHP R CCD20009 88.03.2

HD 142926 B7IVesh

vsini 300



IUE 3 21151 L 83.09.24 - 3 27509 L 86.01.11

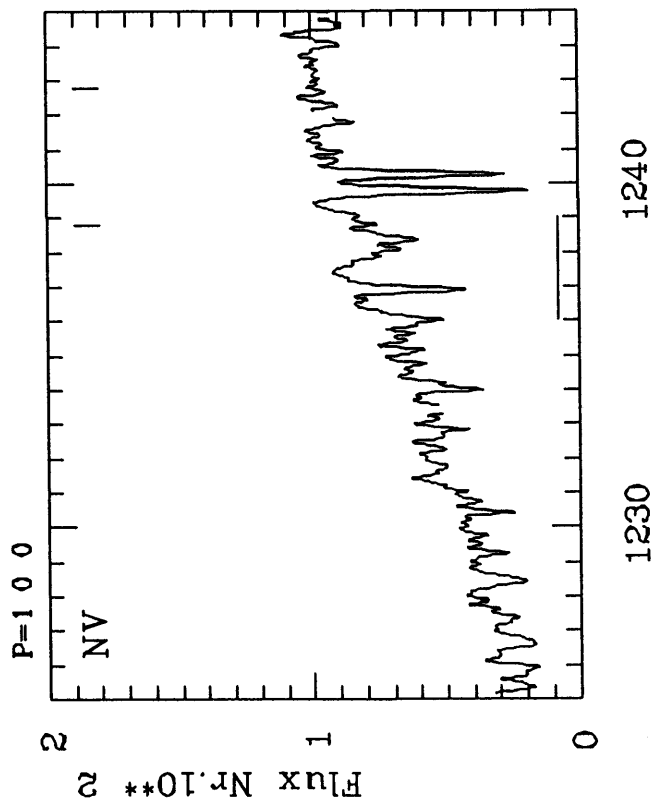
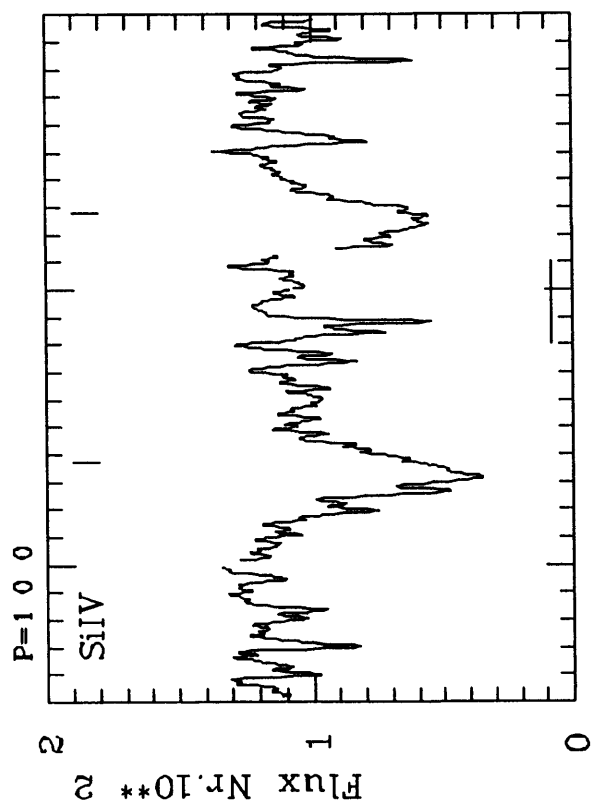
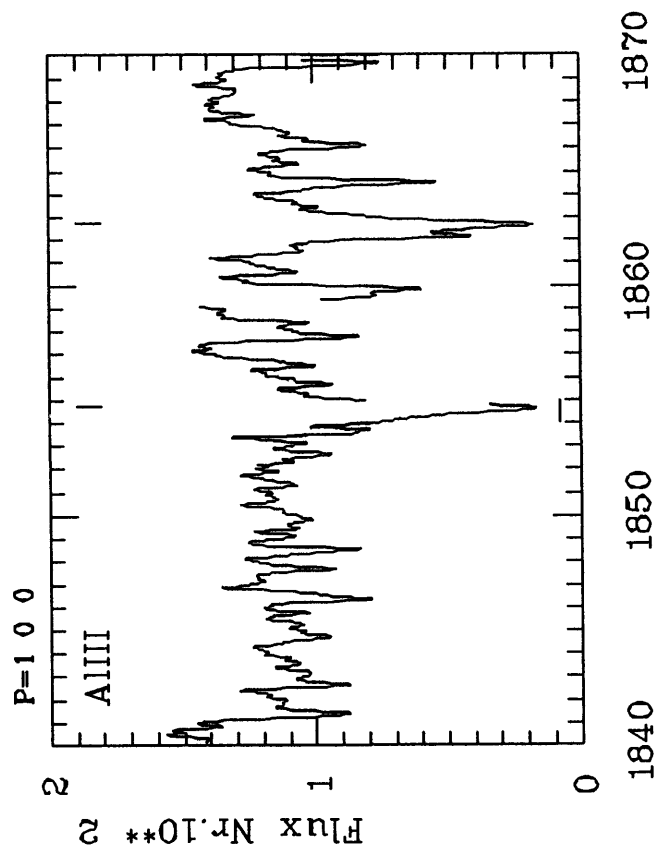
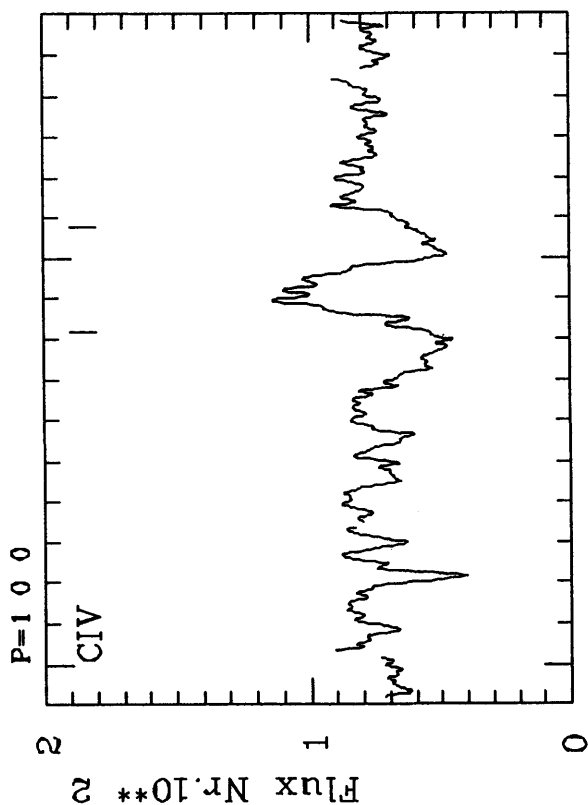
IUE 2 16864 L 83.09.24

OHP R GA5208

82.05.05 - OHP R CCD20009 88.03.2

HD 142983 B3:IV:esh

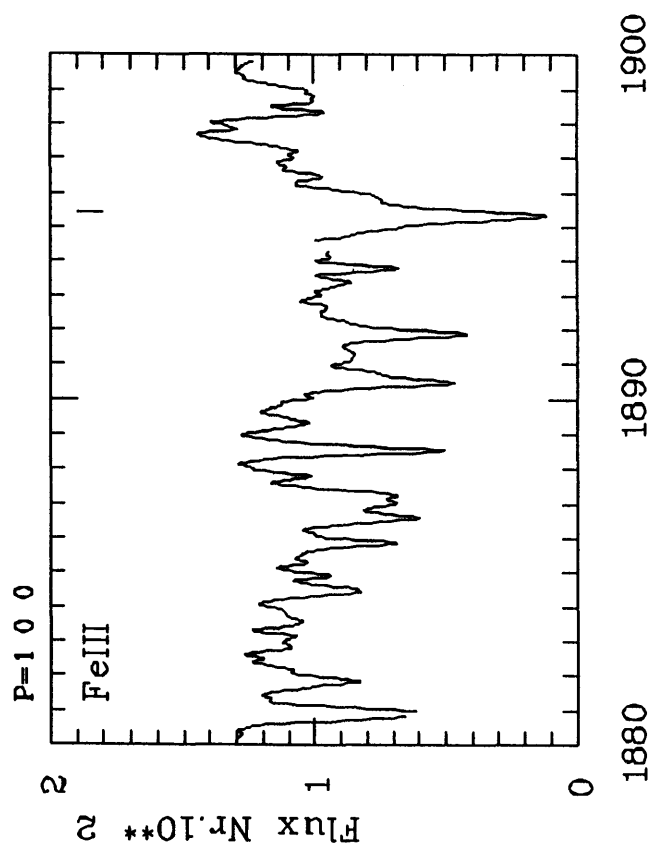
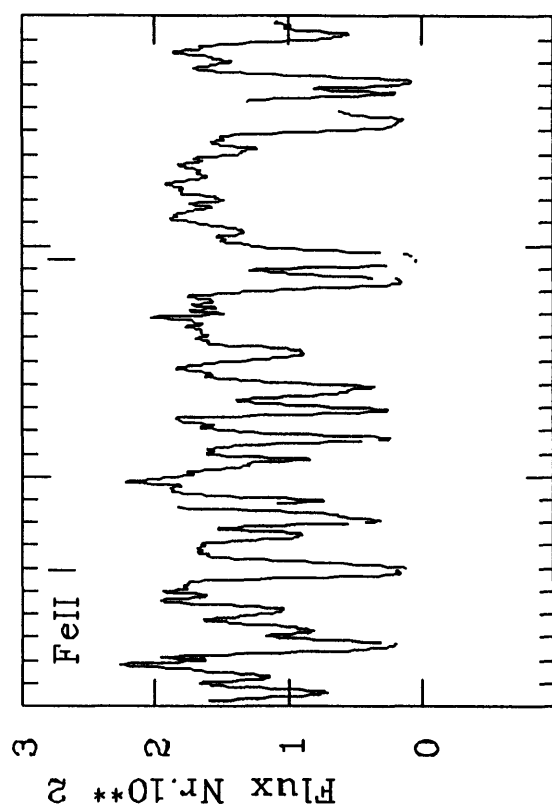
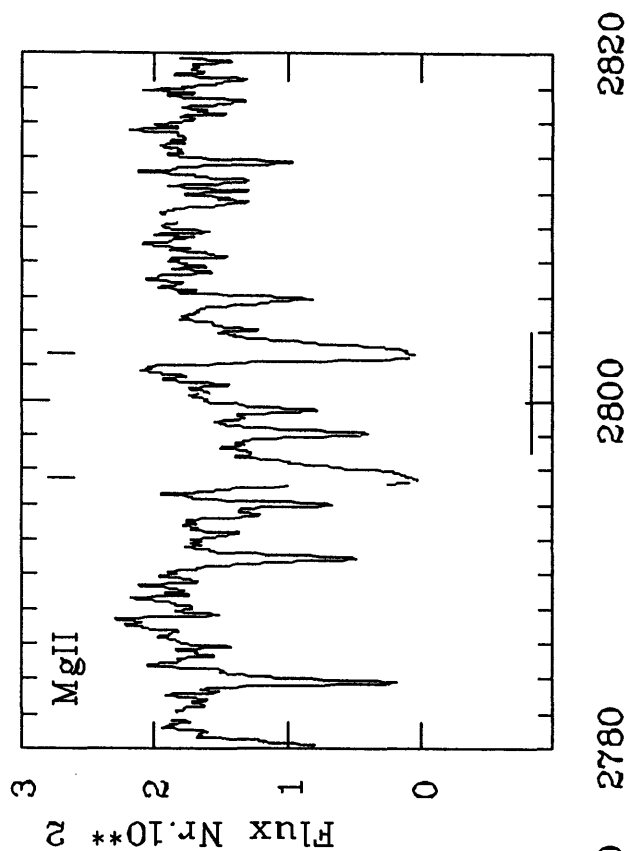
vsini 400



IUE 3 28613 L 86.07.05
IUE 2 14293 S 82.09.29

HD 142983 B3:IV:esh

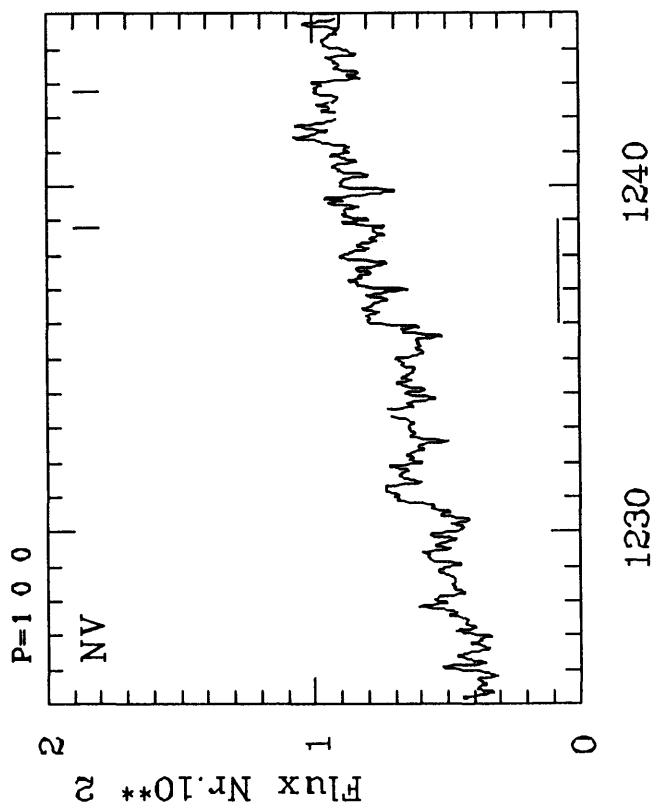
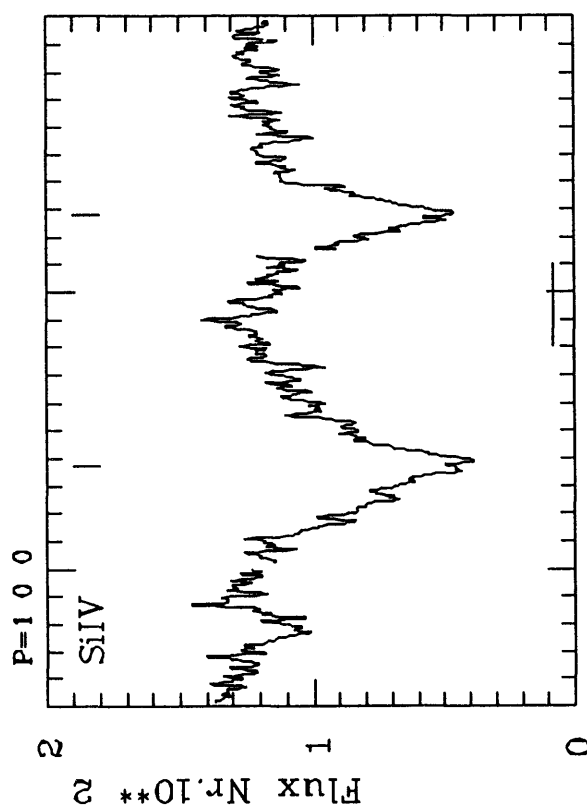
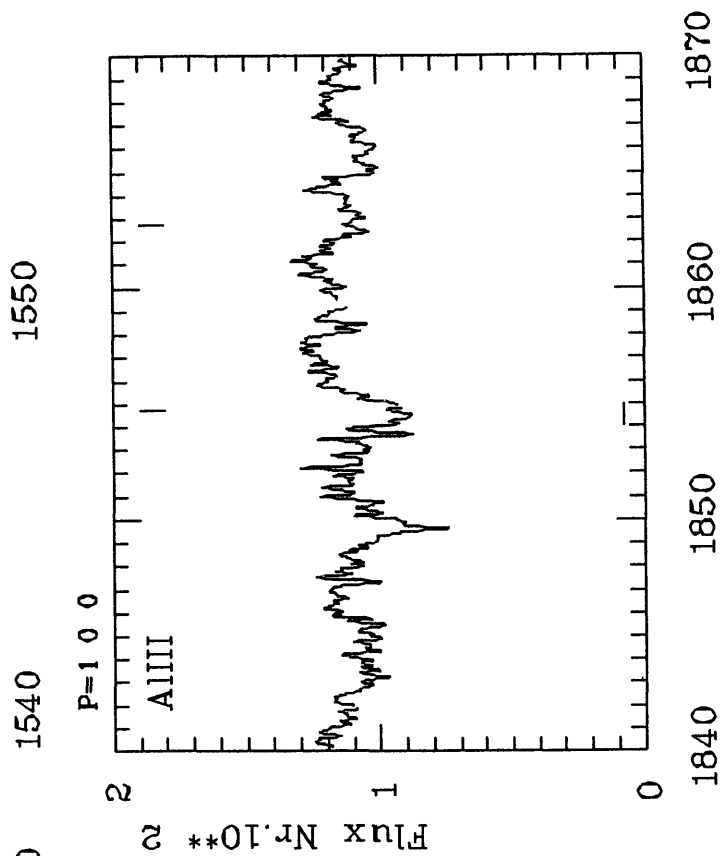
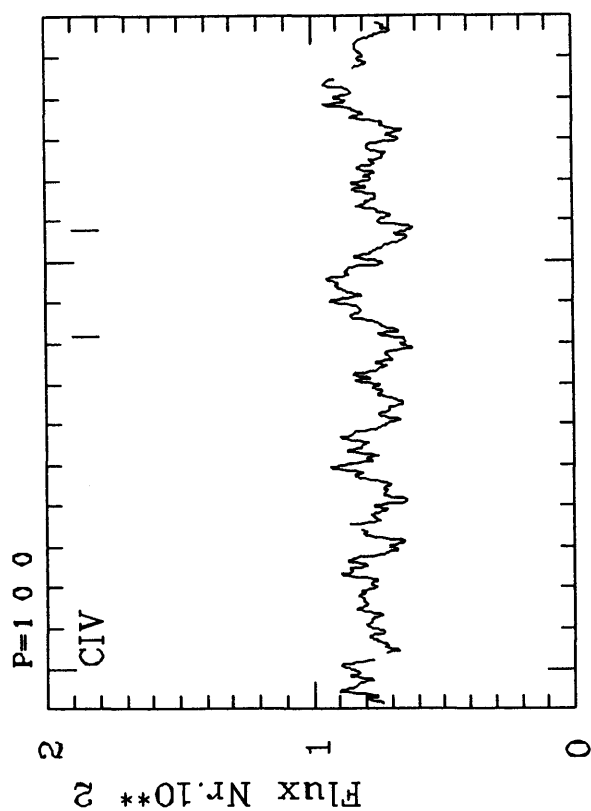
vsini 400



IUE 3 28613 L 86.07.05
 IUE 2 14293 S 82.09.29

HD 148184 B1.5Ve

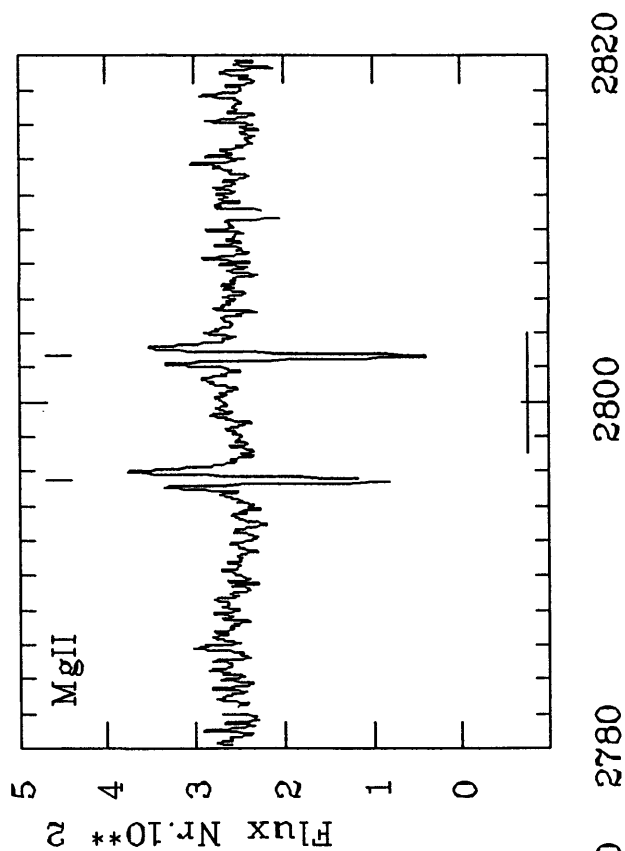
vsini 140



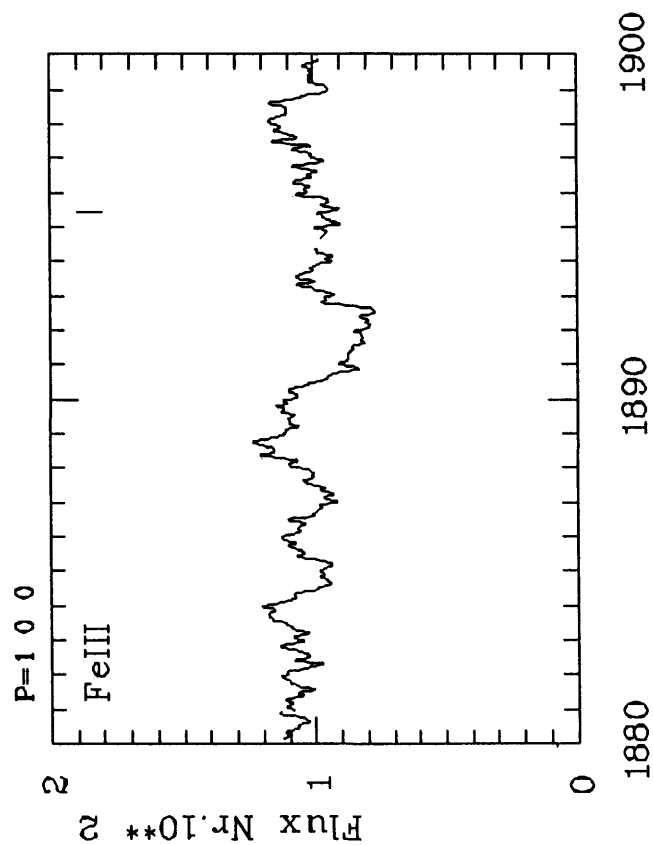
IUE 3 15059 L 81.09.20
 IUE 2 02505 S 78.09.30

HD 148184 B1.5Ve

vsini 140

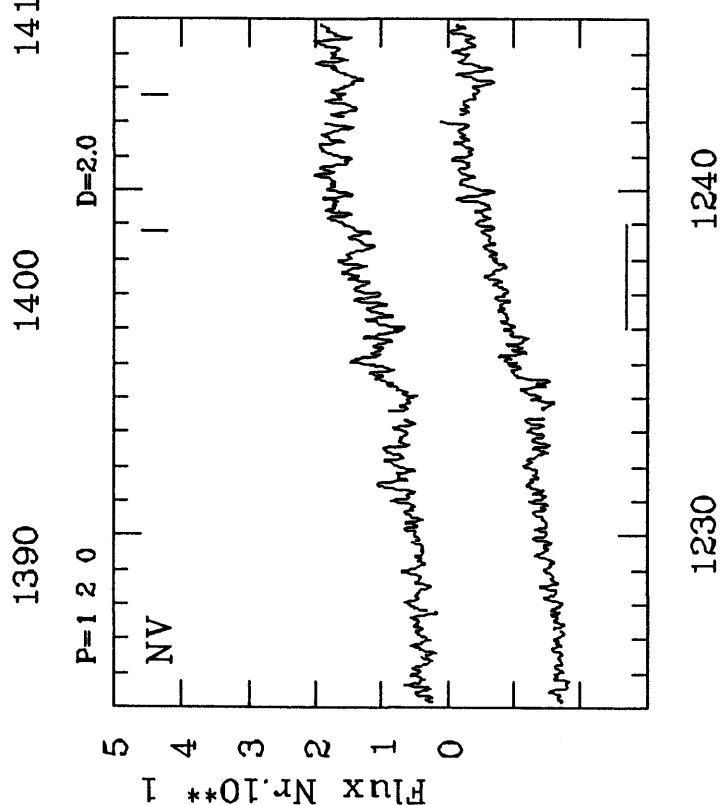
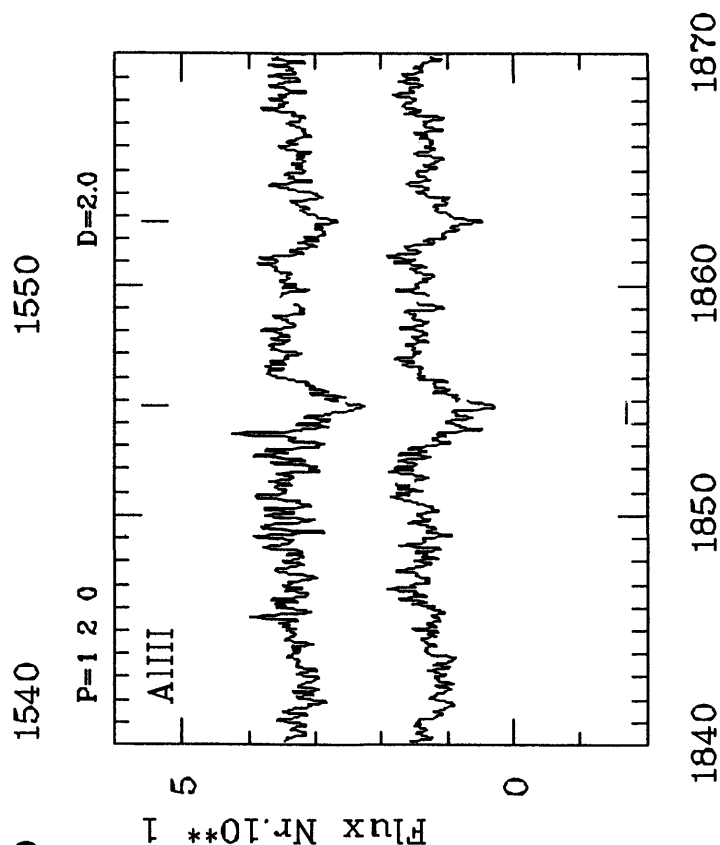
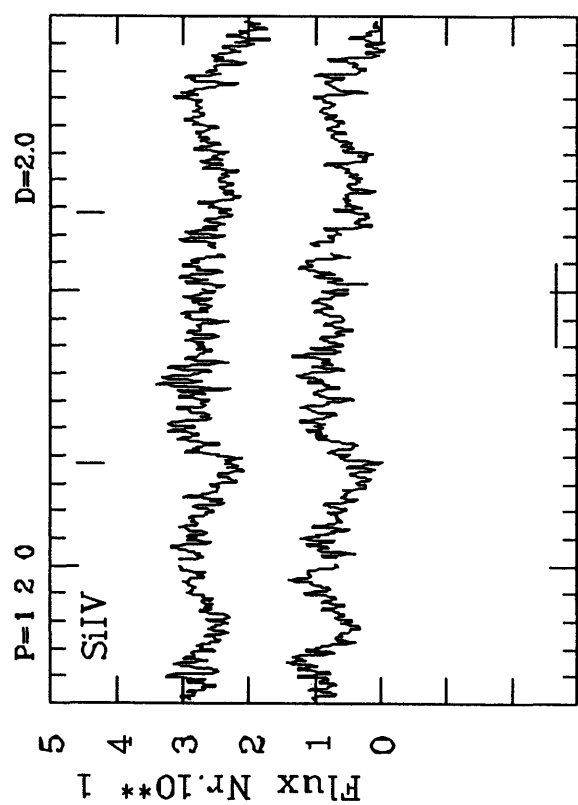
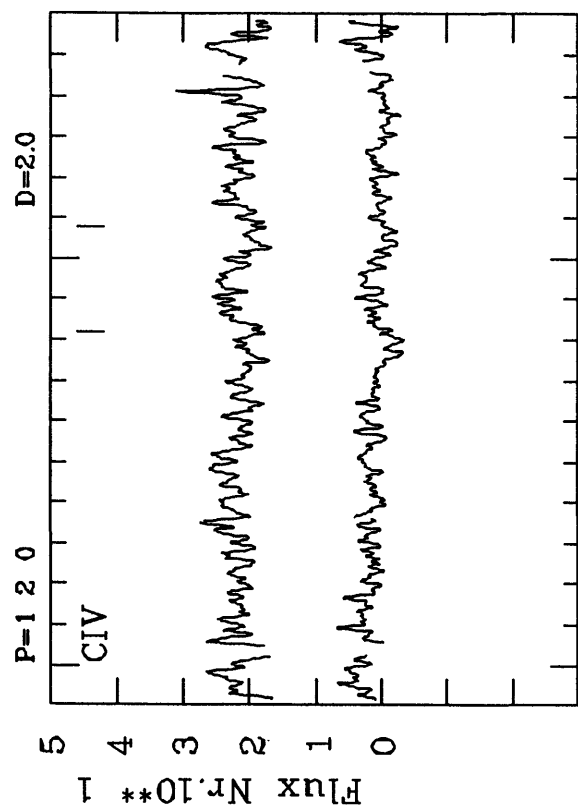


IUE 3 15059 L 81.09.20
 IUE 2 02505 S 78.09.30



HD 149671 B7IVe

vsini 230



IUE 3 23429 L 84.07.08 - 3 25958 L 85.05.16

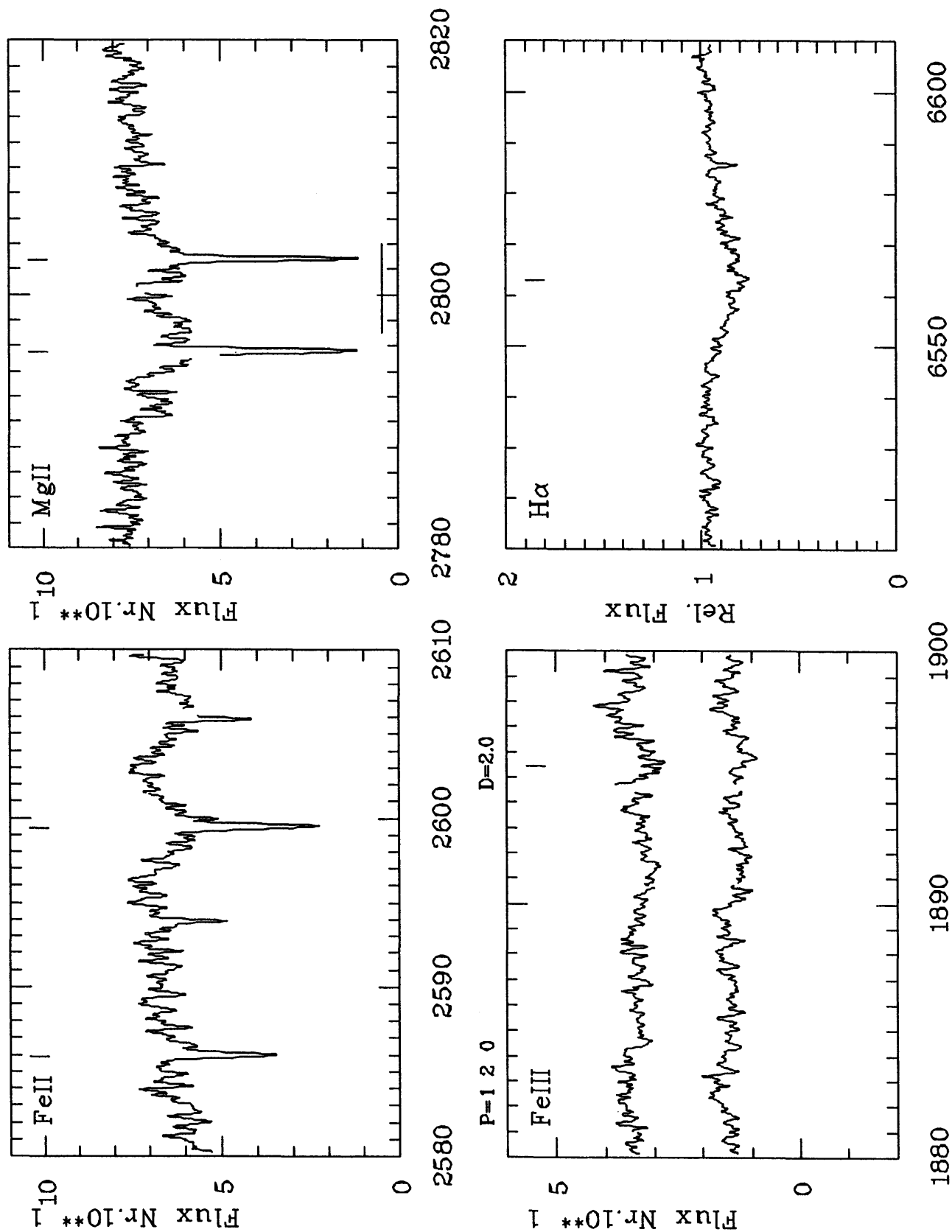
IUE 1 05994 L 85.05.16

ESO R F9252

88.04.07

HD 149671 B7IVe

vsini 230



IUE 3 23429 L 84.07.08 - 3 25958 L 85.05.16

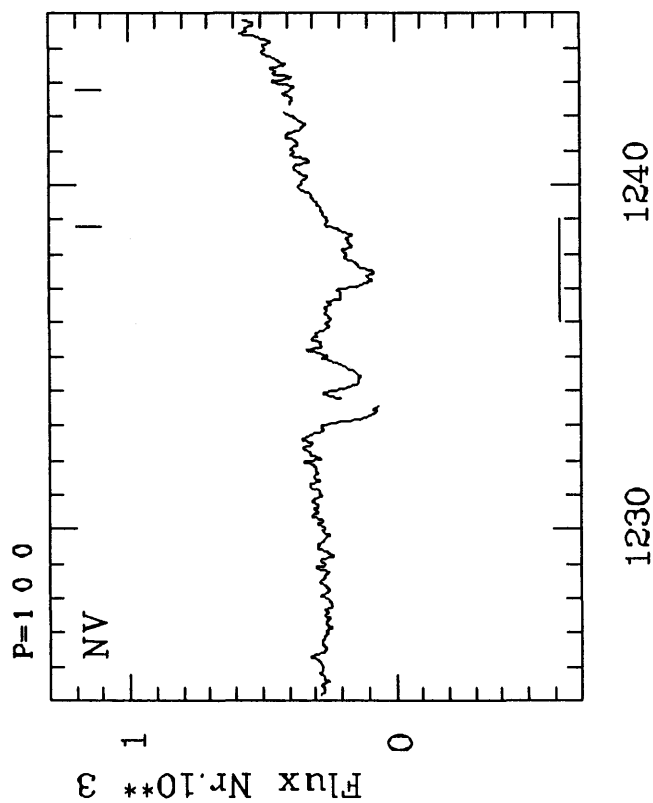
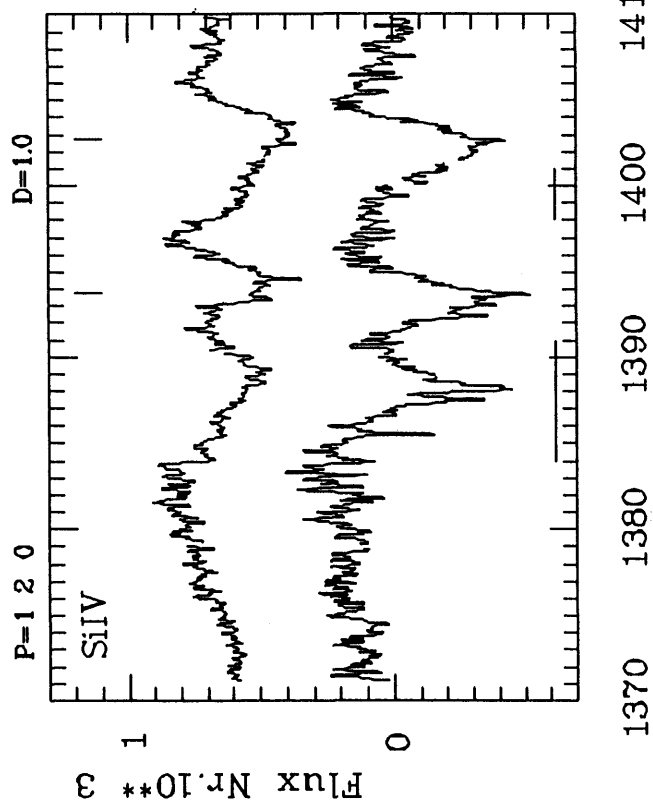
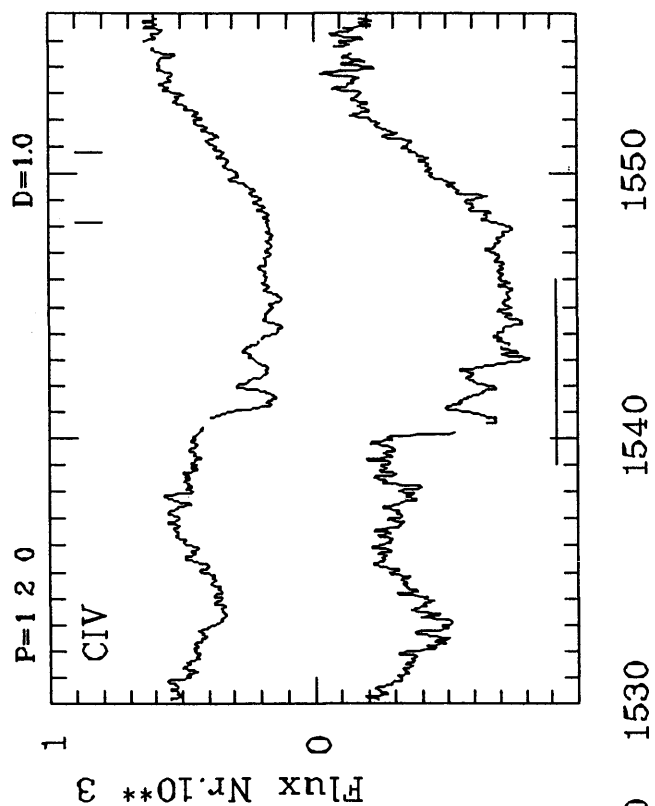
IUE 1 05994 L 85.05.16

ESO R F9252

88.04.07

HD 149757 09.5Ve

vsini 320



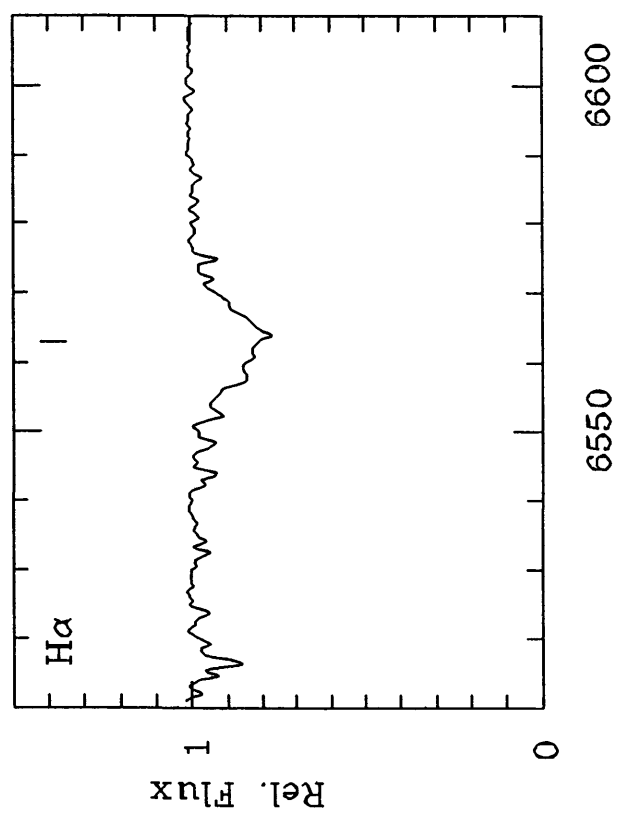
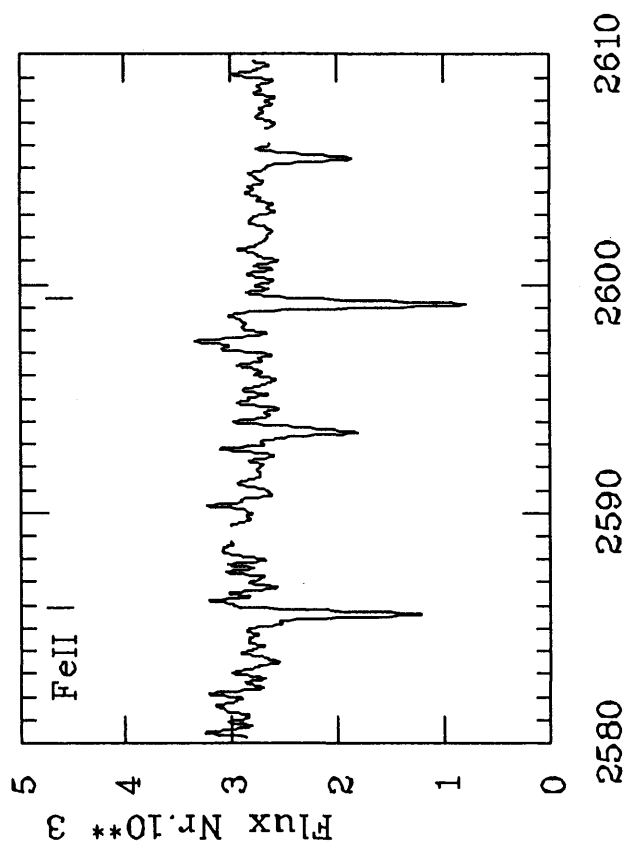
IUE 3 08798 L 80.04.21 - 3 15207 L 81.10.08

IUE 2 07573 S 80.04.21

OHP R CCD20021 88.05.29

HD 149757 09.5Ve

vsini 320



IUE 3 08798 L 80.04.21 - 3 15207 L 81.10.08

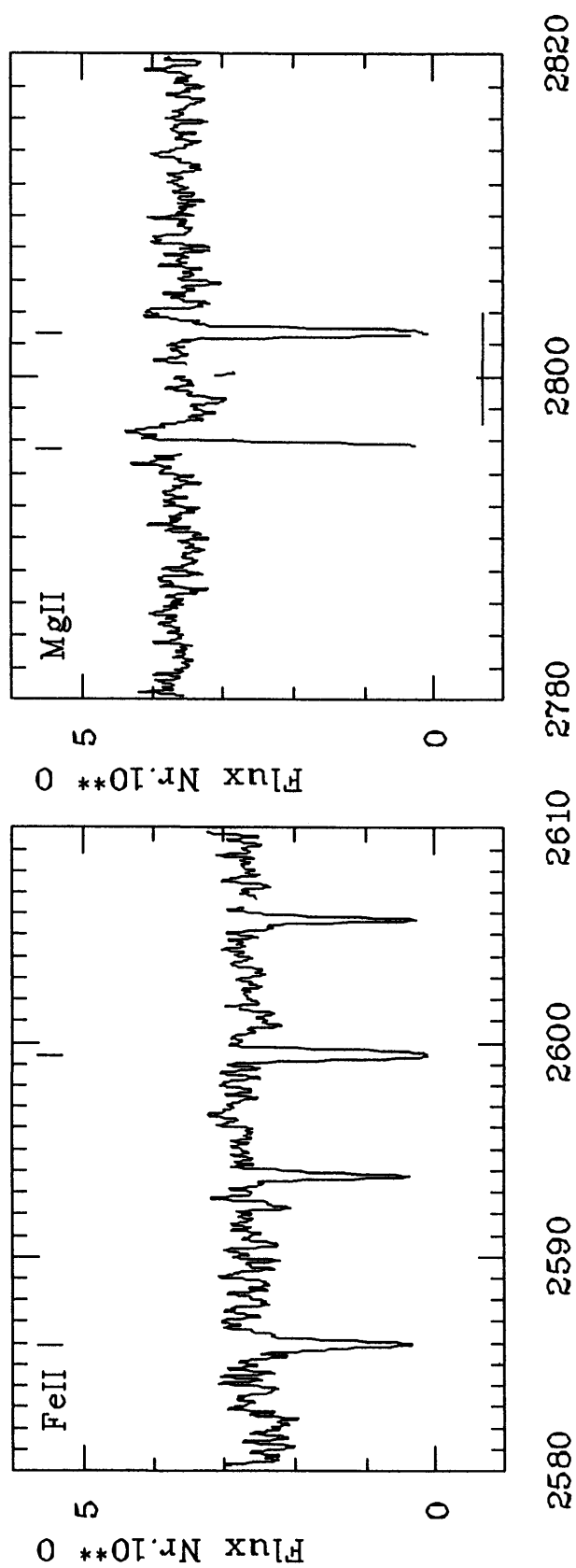
IUE 2 07573 S 80.04.21

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OHP R CCD20021 88.05.29



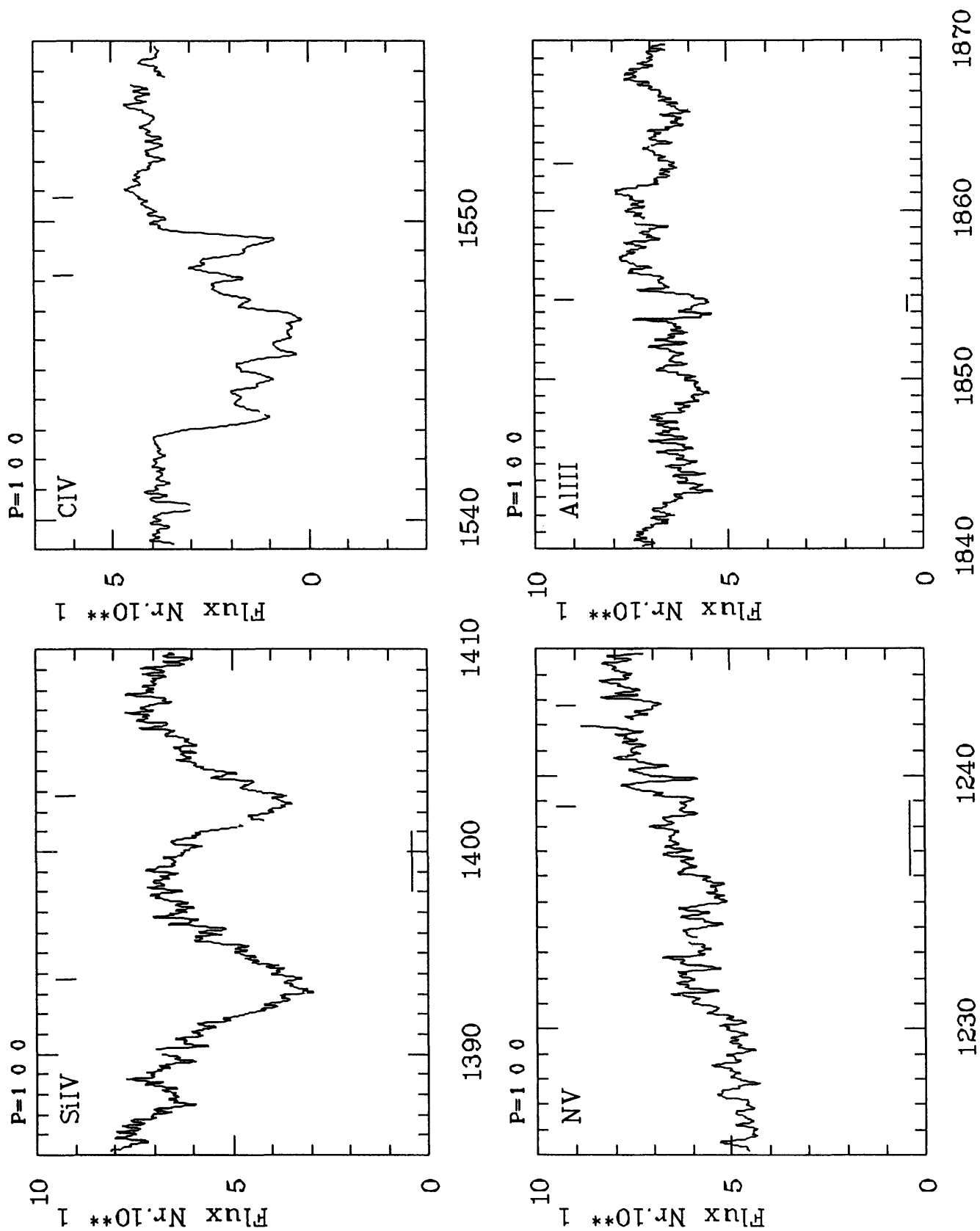
HD 150422 B1-B2ne



IUE 1 05521 L 85.03.14

HD 153261 B2IVne

vsini 200



IUE 3 31221 L 87.06.20

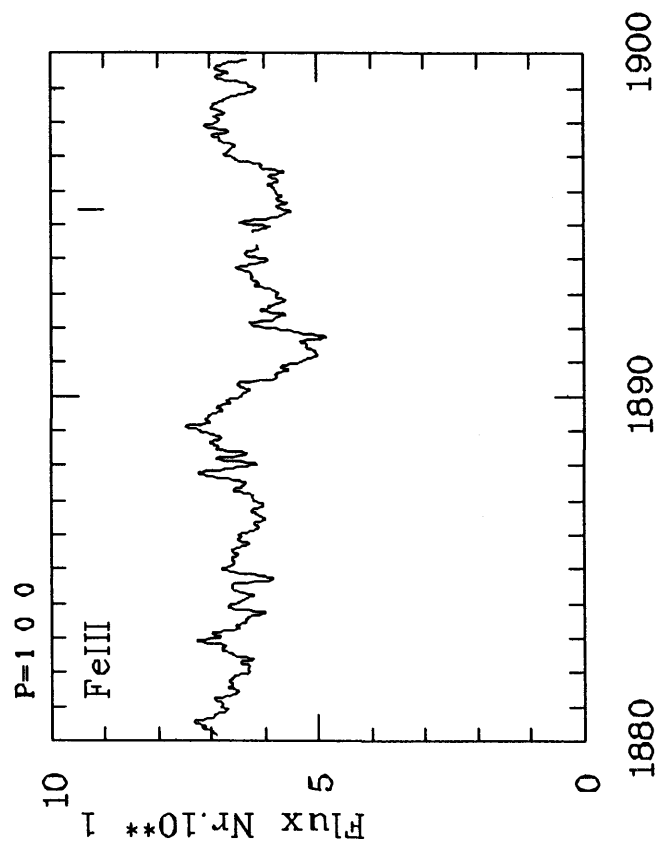
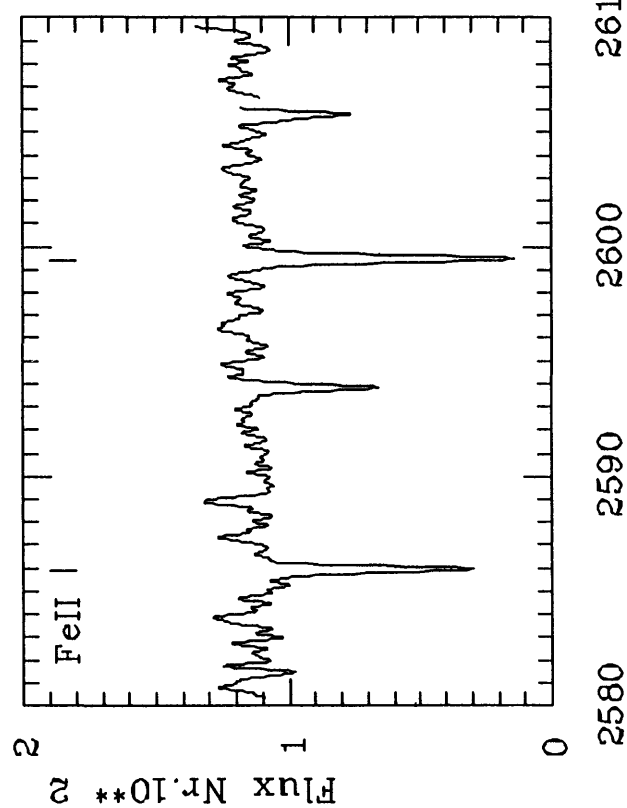
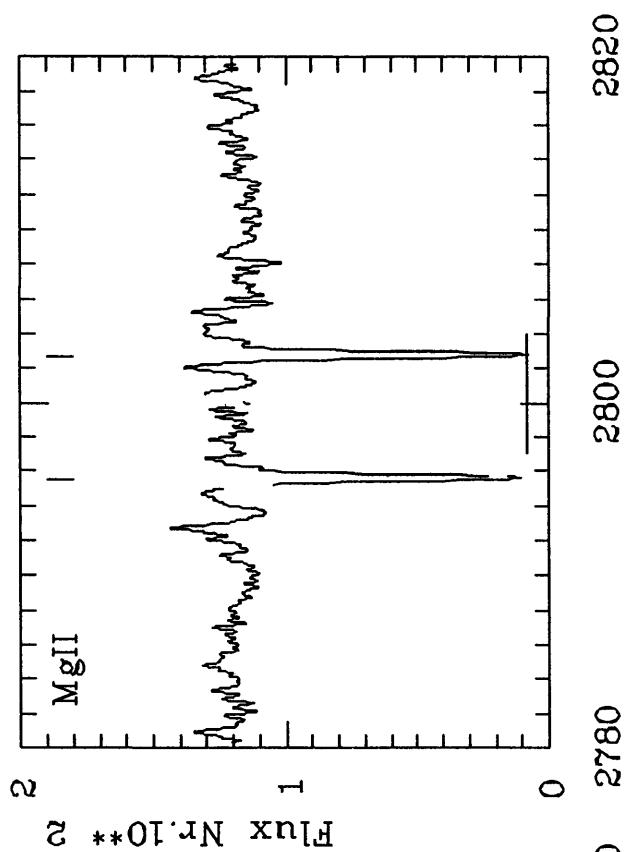
IUE 1 11047 L 87.06.20

ESO B G13787 88.04.09

ESO R F9253 88.04.07

HD 153261 B2IVne

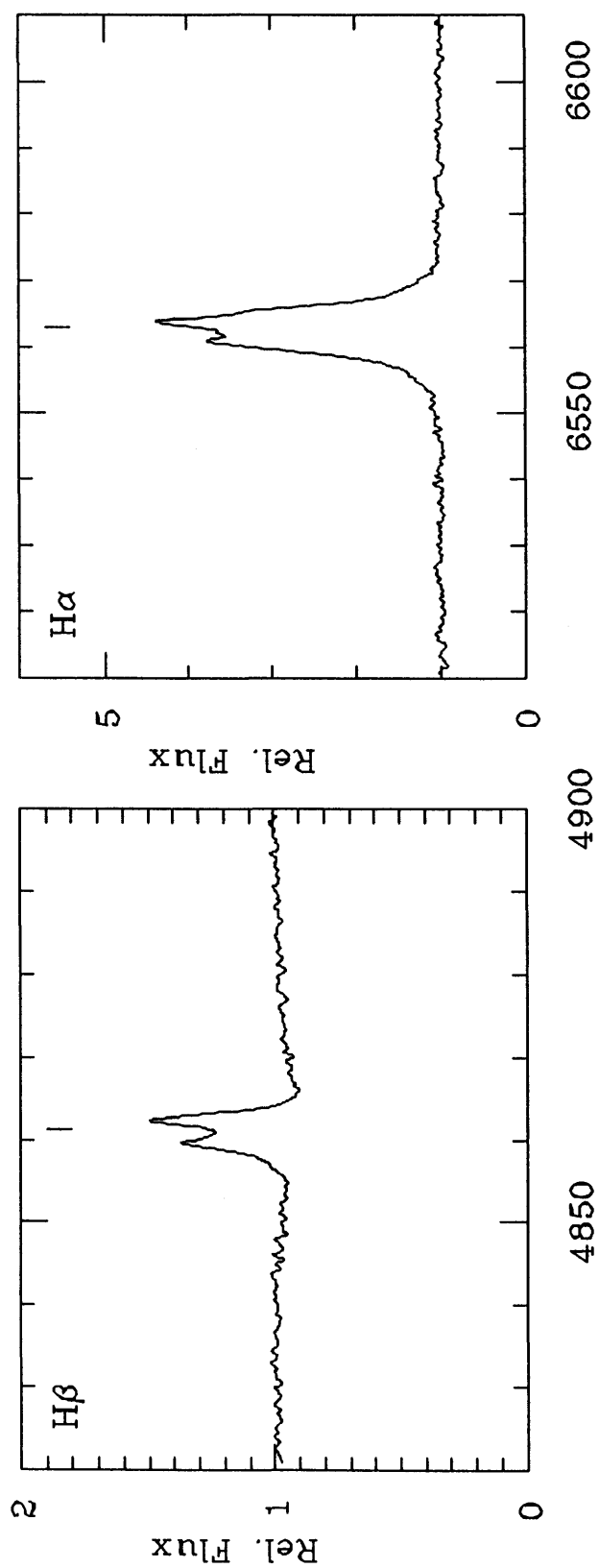
vsini 200



IUE 3 31221 L 87.06.20
 IUE 1 11047 L 87.06.20
 ESO B G13787 88.04.09
 ESO R F9253 88.04.07

HD 153261 B2IVne

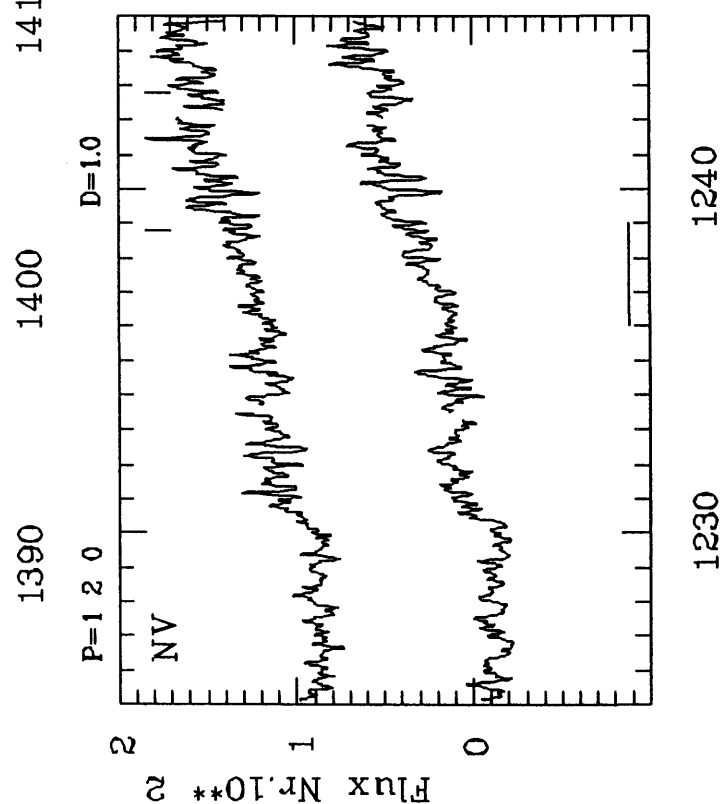
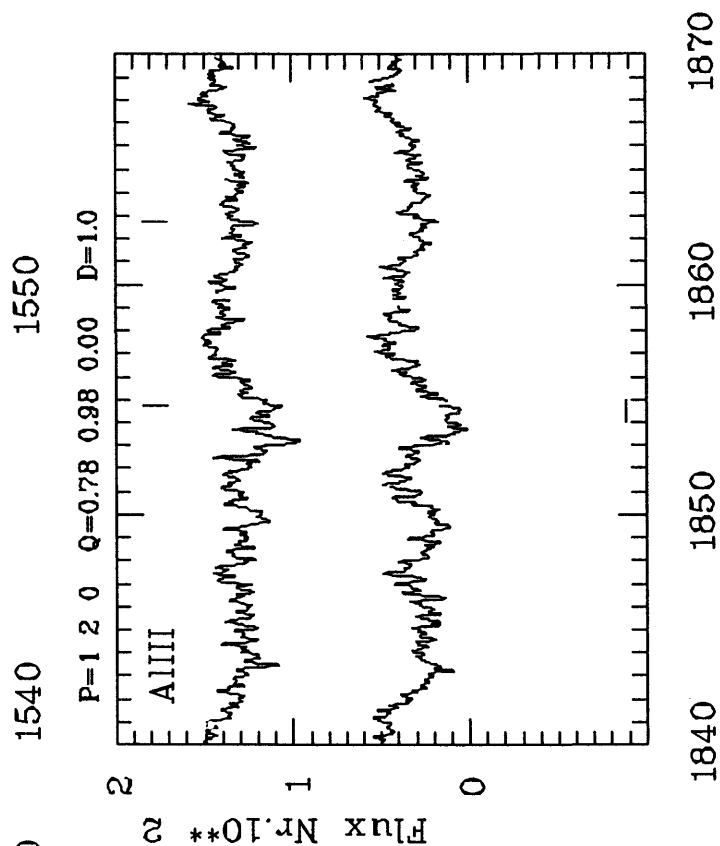
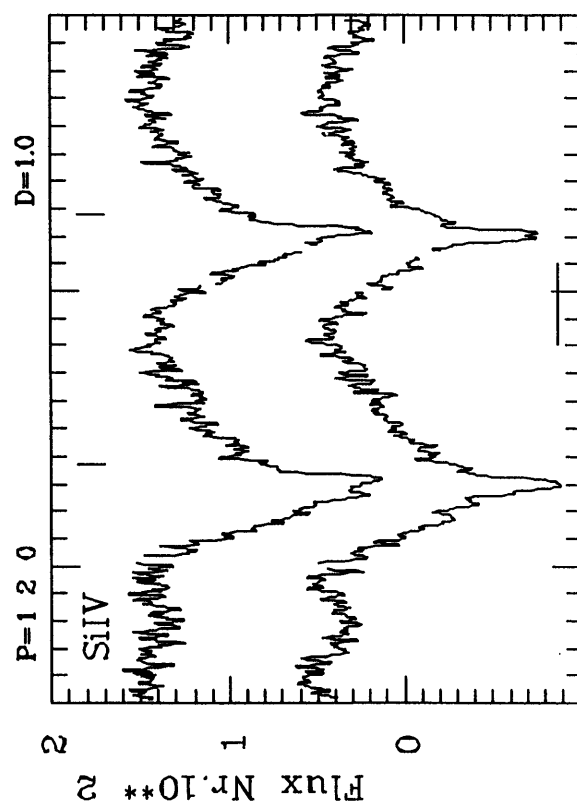
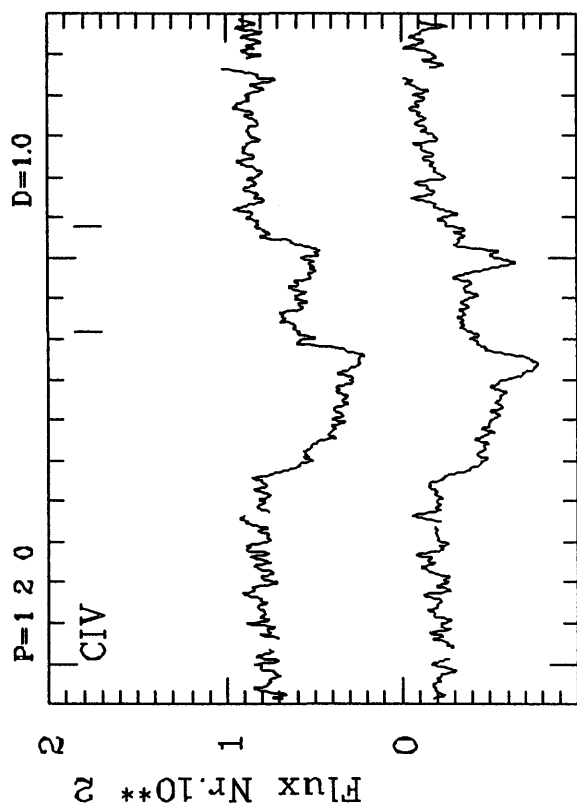
vsini 200



IUE 3 31221 L 87.06.20
 IUE 1 11047 L 87.06.20
 ESO B G13787 88.04.09
 ESO R F9253 88.04.07

HD 157042 B2.5IVe

vsini 320

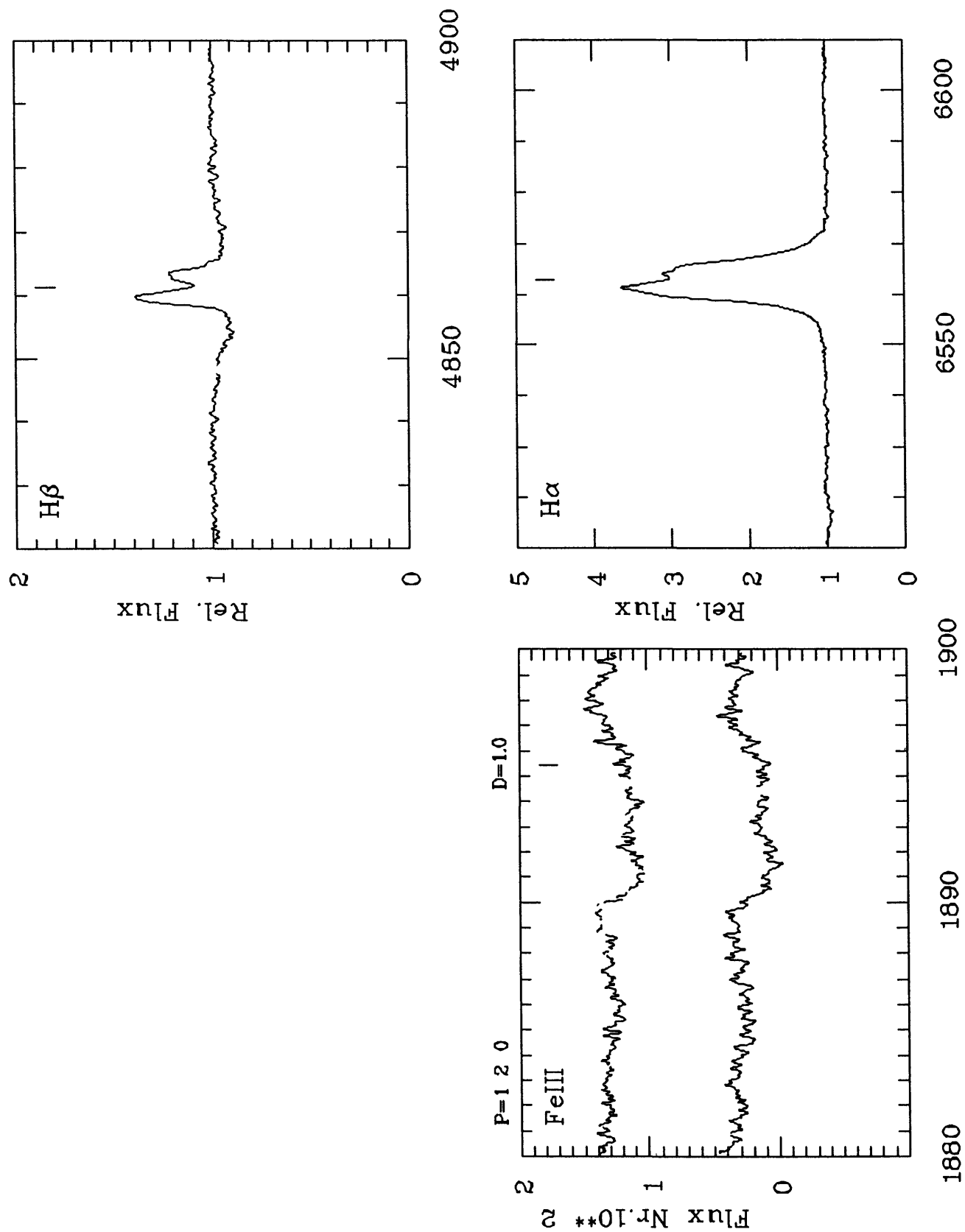


IUE 3 28114 L 86.04.06 - 3 29404 L 86.10.08

ESO B G13788 88.04.09
 ESO R G13764 88.04.05

HD 157042 B2.5IVe

vsini 320



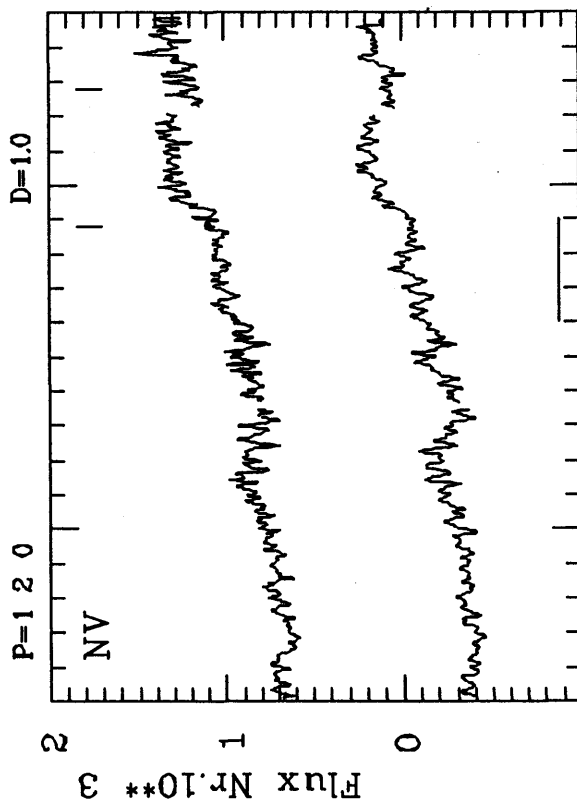
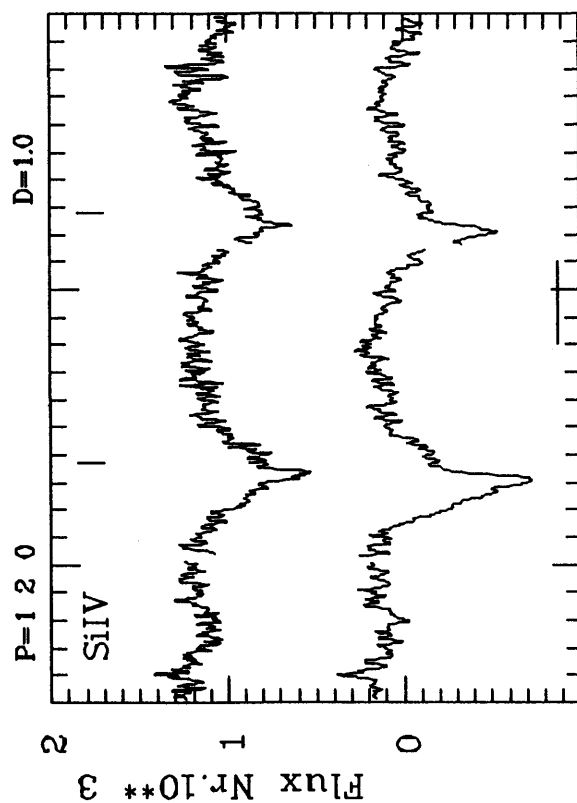
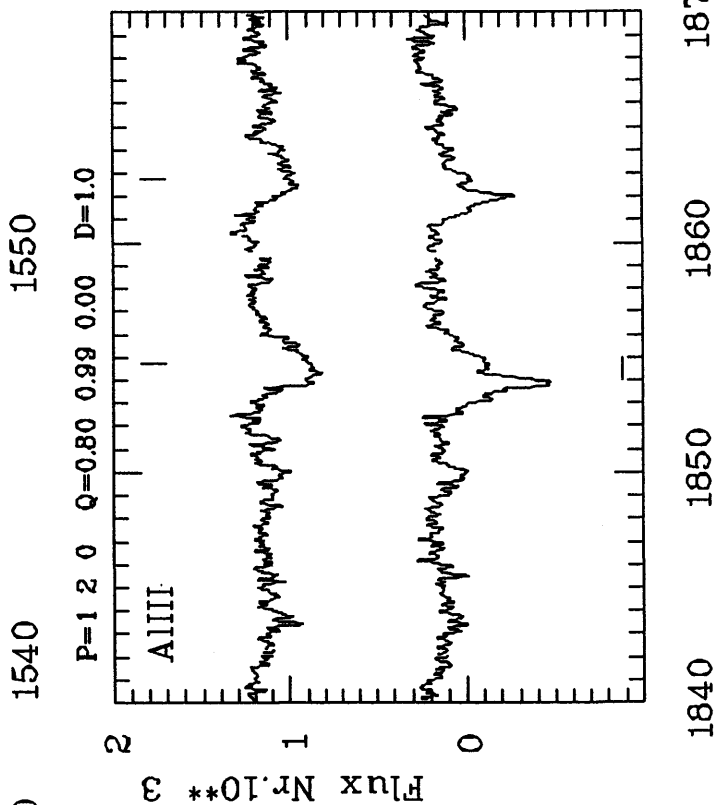
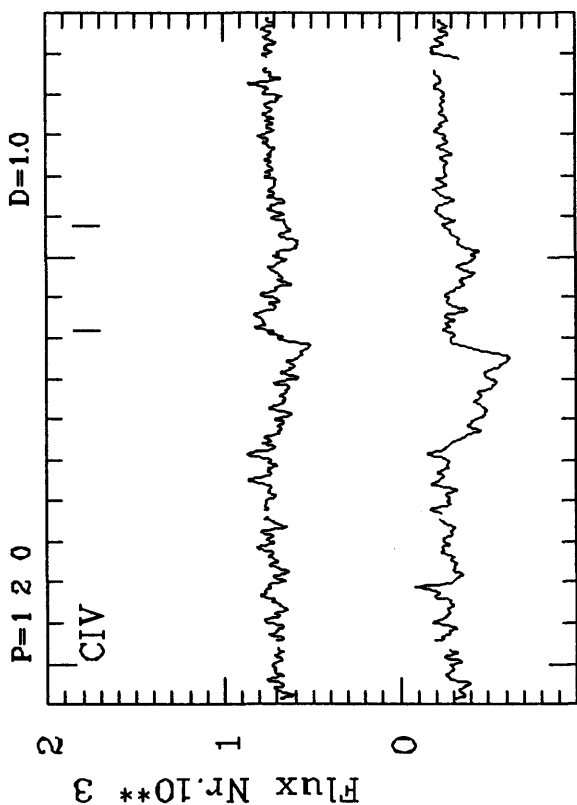
IUE 3 28114 L 86.04.06 - 3 29404 L 86.10.08

ESO B G13788 88.04.09

ESO R G13764 88.04.05

HD 158427 B3Ve

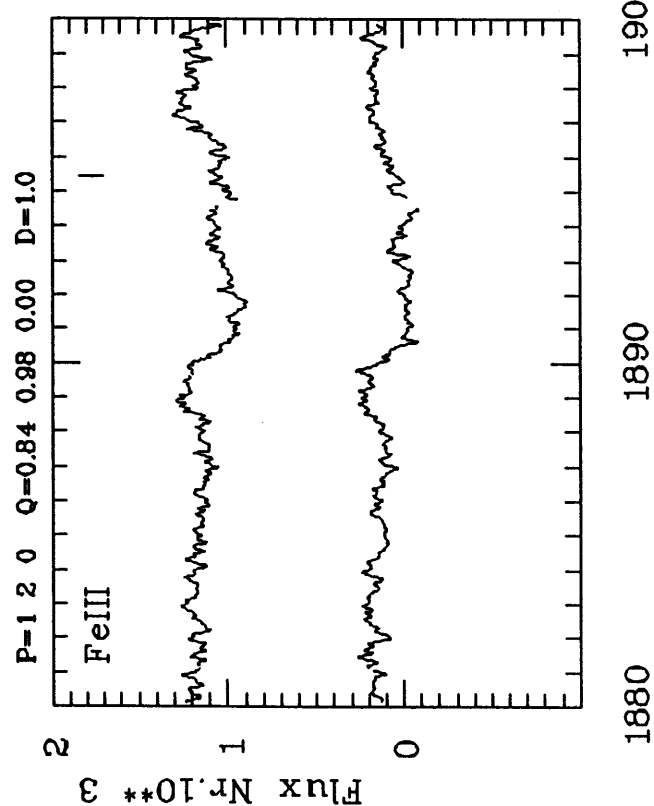
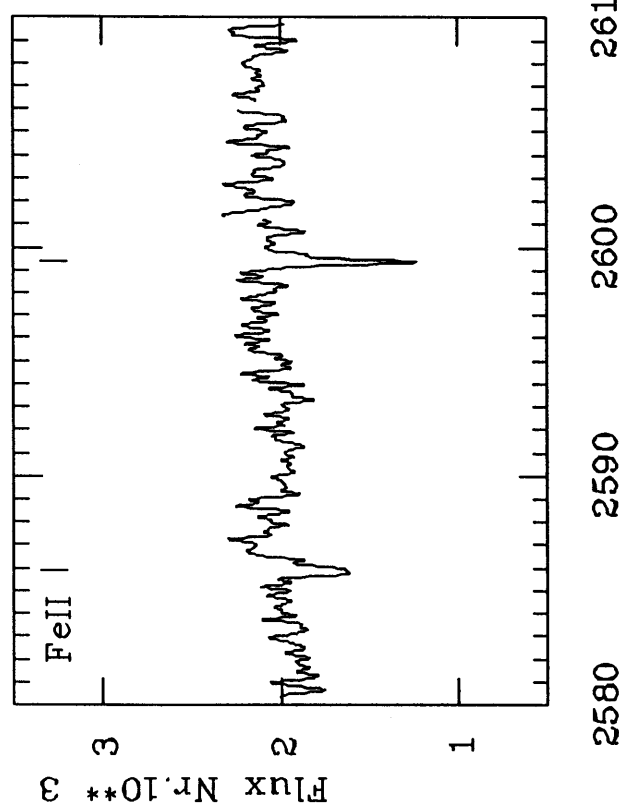
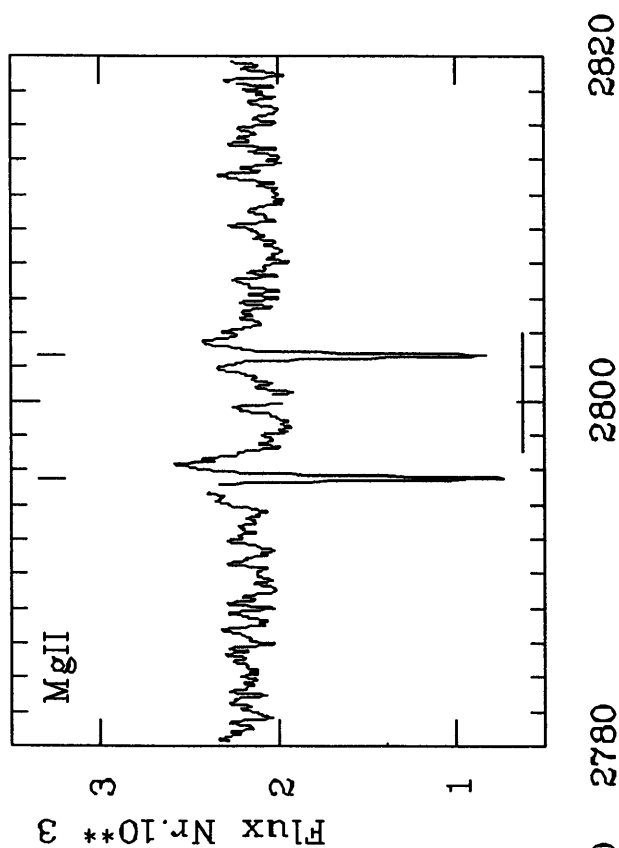
vsini 250



IUE 3 28115 L 86.04.06 - 3 30913 L 87.05.04
 IUE 1 09353 L 86.10.19

HD 158427 B3Ve

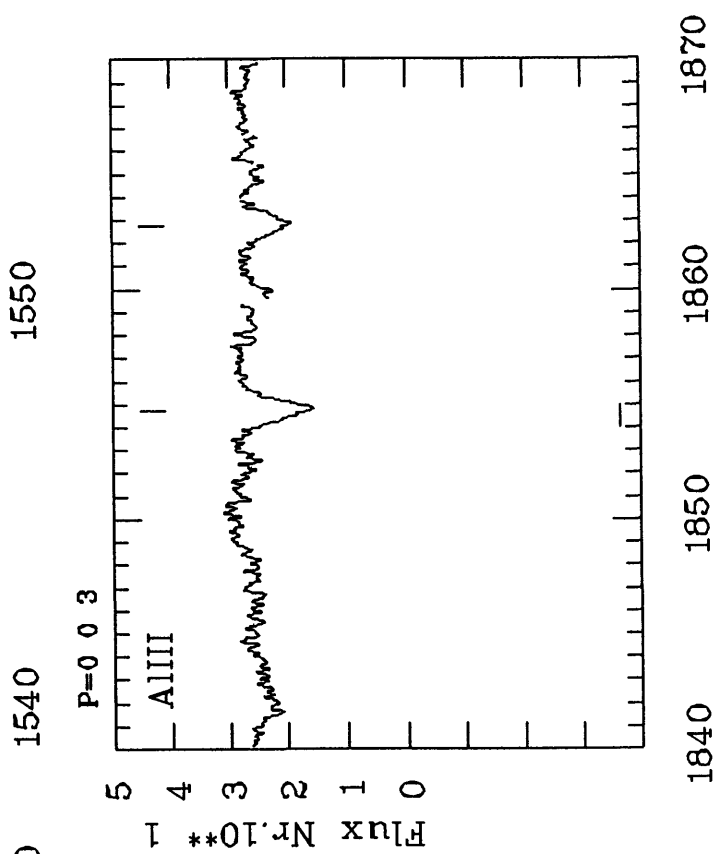
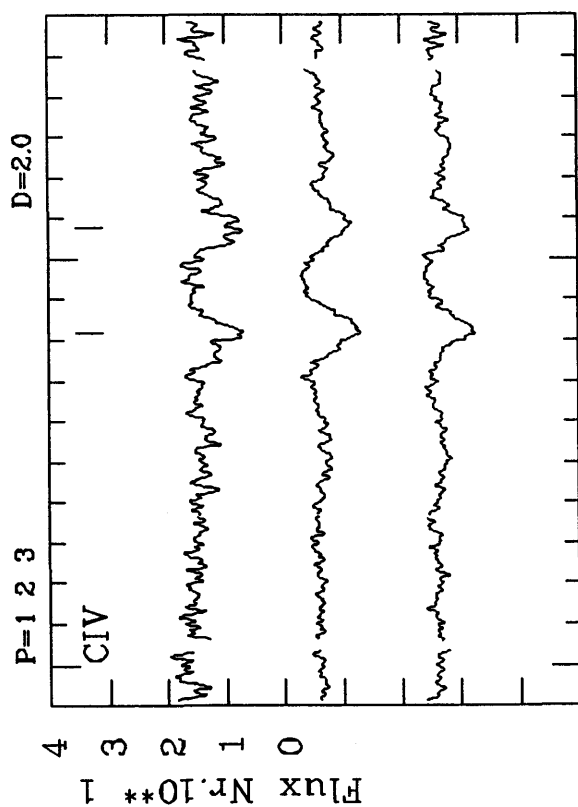
vsini 250



IUE 3 28115 L 86.04.06 - 3 30913 L 87.05.04
 IUE 1 09353 L 86.10.19

HD 158643 B9.5IVe

vsini 220

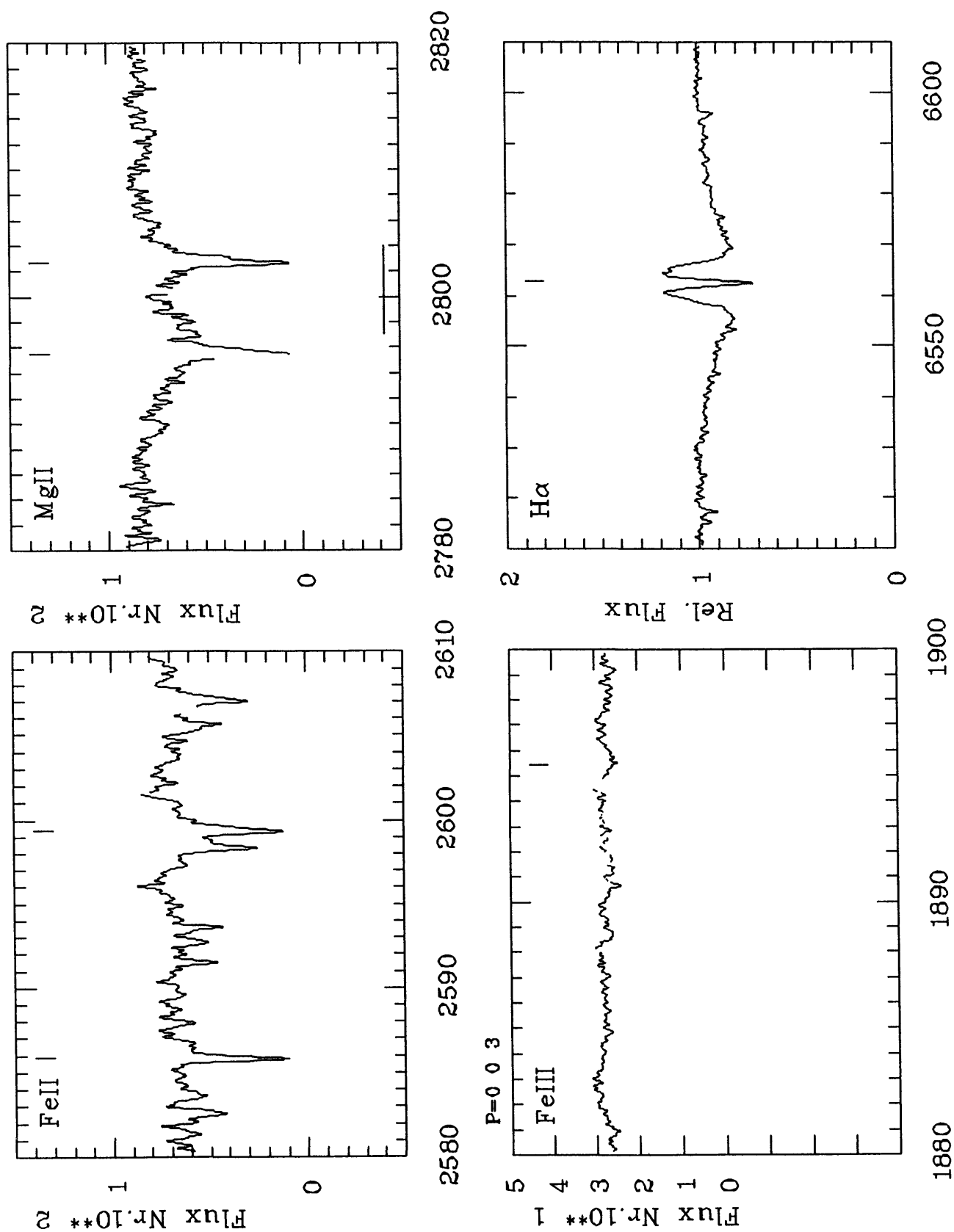


IVE 3 25784 L 85.04.26 - 3 28113 L 86.04.06 - 3 30912 L 87.05.04
 IVE 1 05834 L 85.04.26

ESO R G13765 88.04.05

HD 158643 B9.5IVe

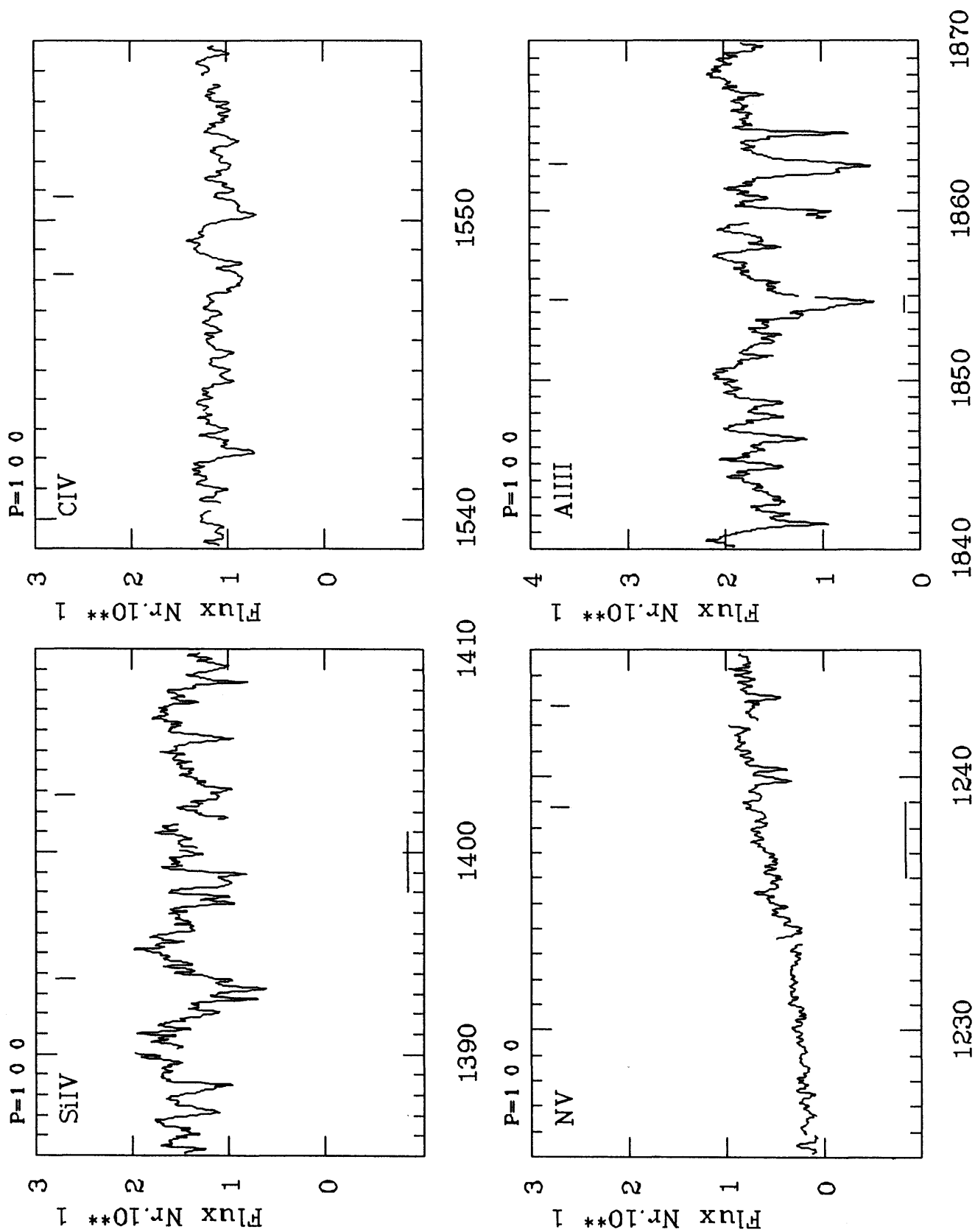
vsini 220



IUE 3 25784 L 85.04.26 - 3 28113 L 86.04.06 - 3 30912 L 87.05.04
 IUE 1 05834 L 85.04.26

ESO R G13765 88.04.05

HD 162732 B5-6(IV-III)esh vsini 300

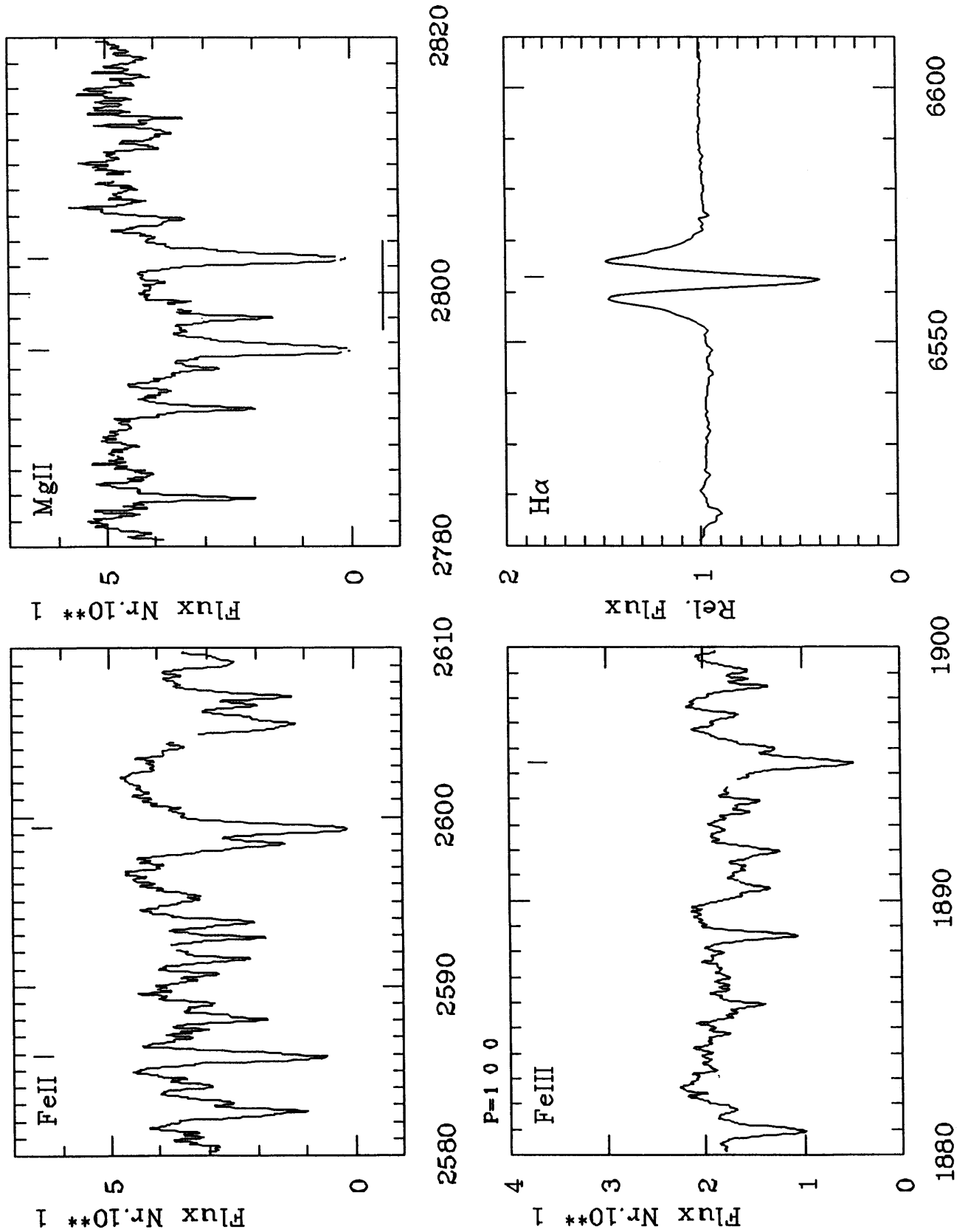


IUE 3 16287 L 82.02.08

IUE 2 12530 L 82.02.08

OHP R CCD20011 88.03.25

HD 162732 B5-6(IV-III)esh vsini 300



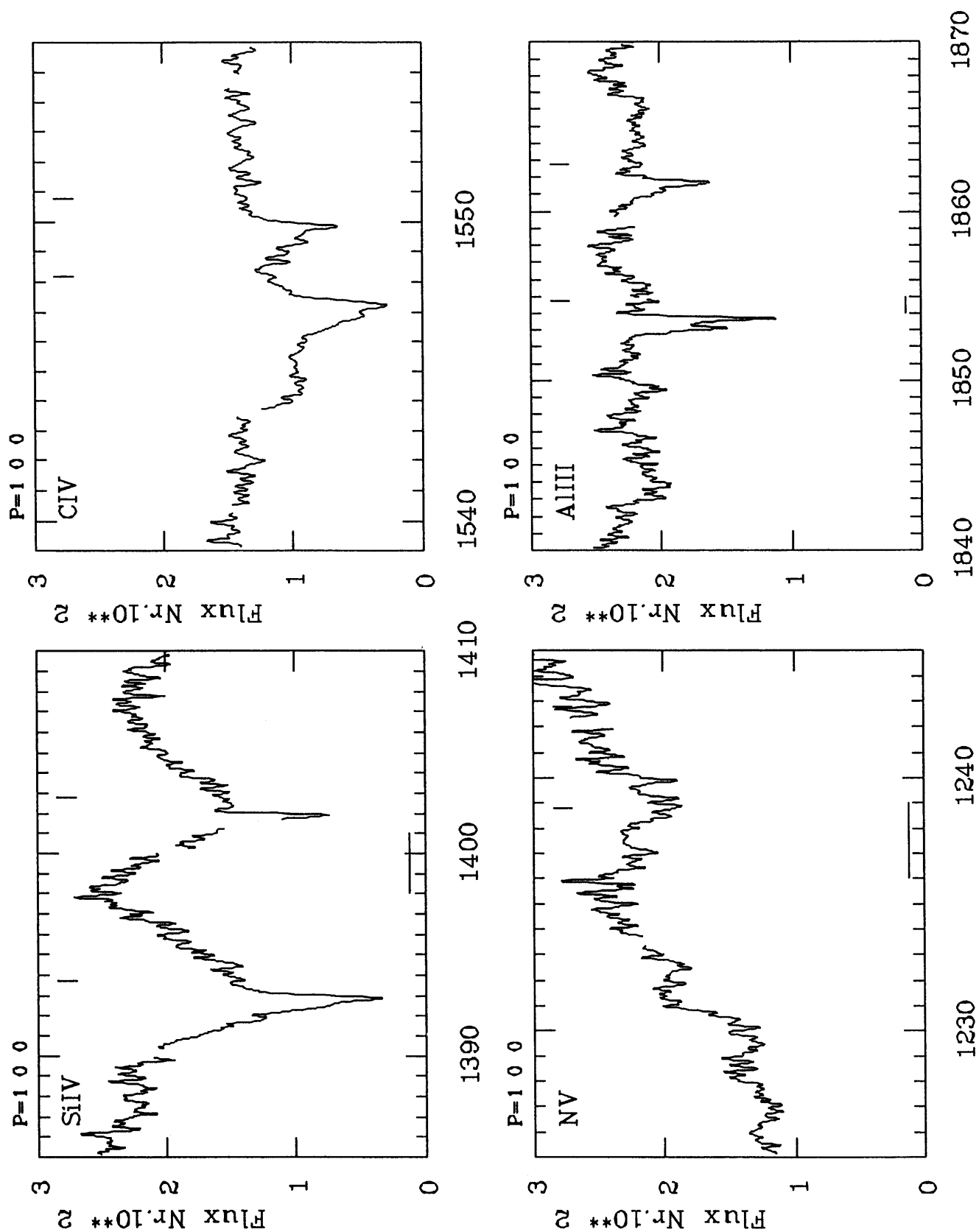
IUE 3 16287 L 82.02.08

IUE 2 12530 L 82.02.08

OHP R CCD20011 88.03.25

HD 164284 B2IV-Ve

vsini 240



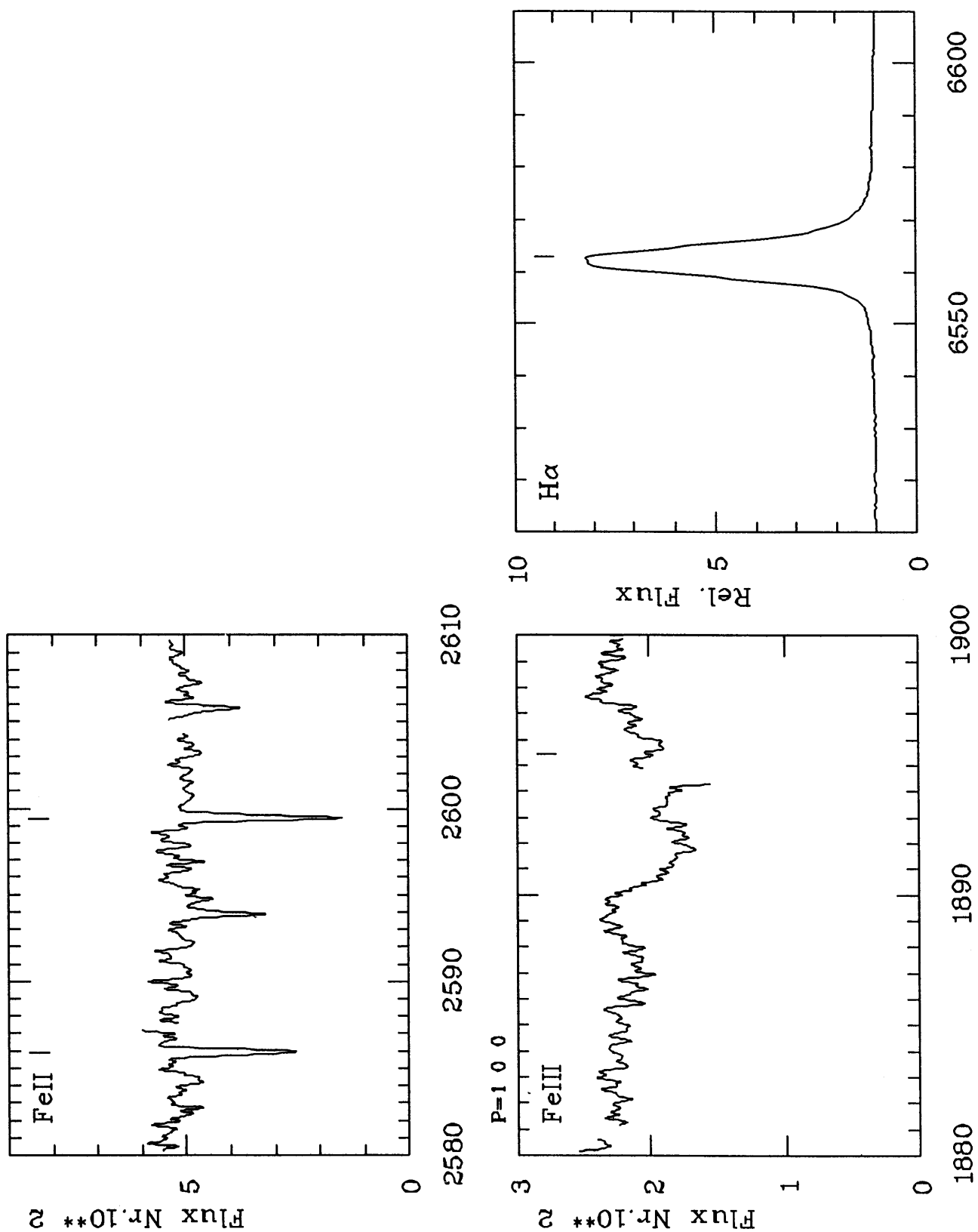
IUE 3 14906 L 81.09.05

IUE 2 11475 L 81.09.05

OHP R CCD20014 88.03.27

HD 164284 B2IV-Ve

vsini 240



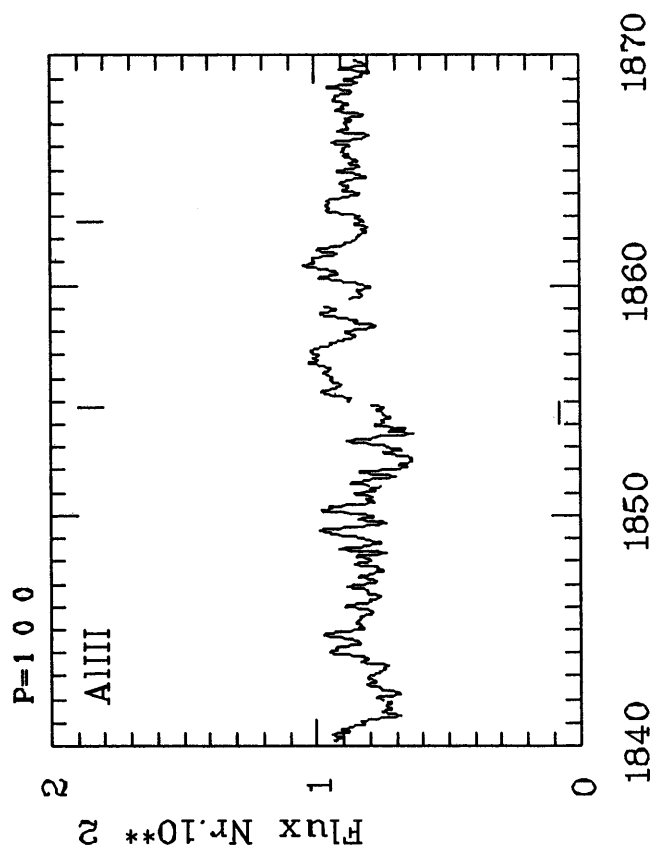
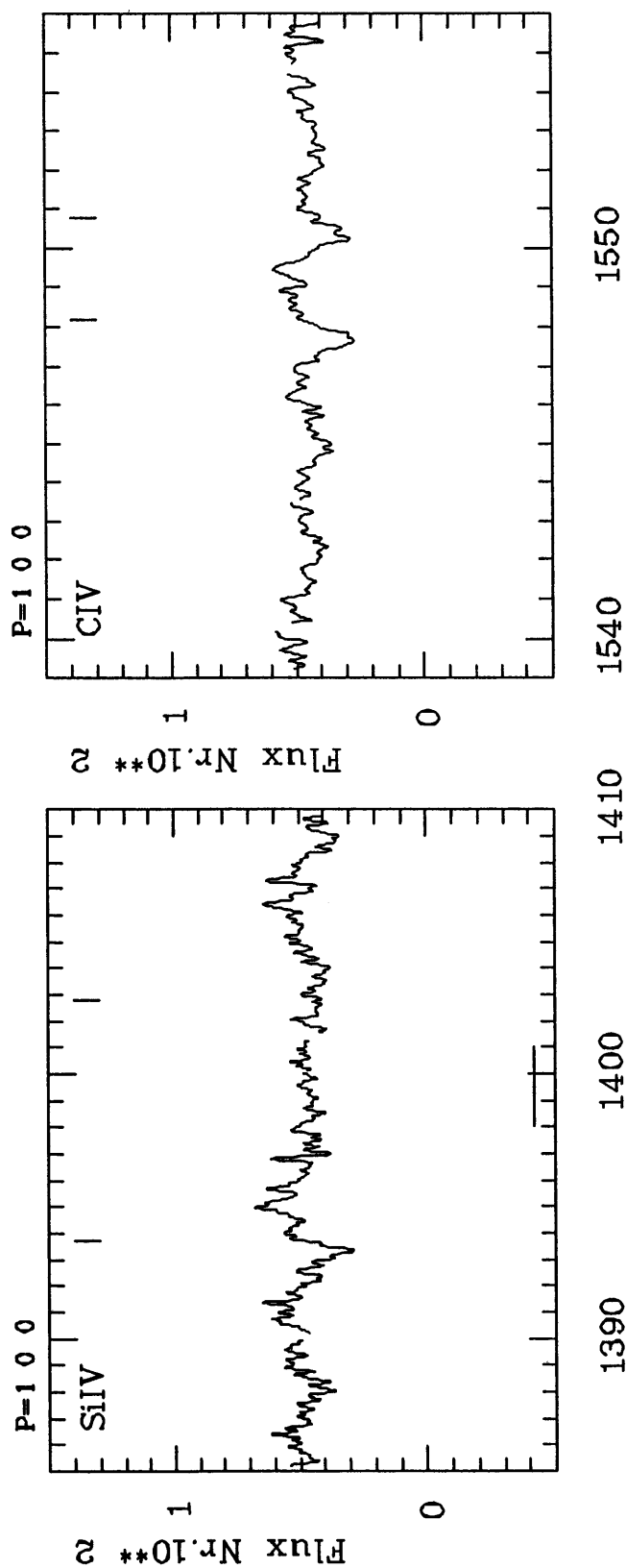
IUE 3 14906 L 81.09.05

IUE 2 11475 L 81.09.05

OHP R CCD20014 88.03.27

HD 166014 B9.5IIIe

vsini 160

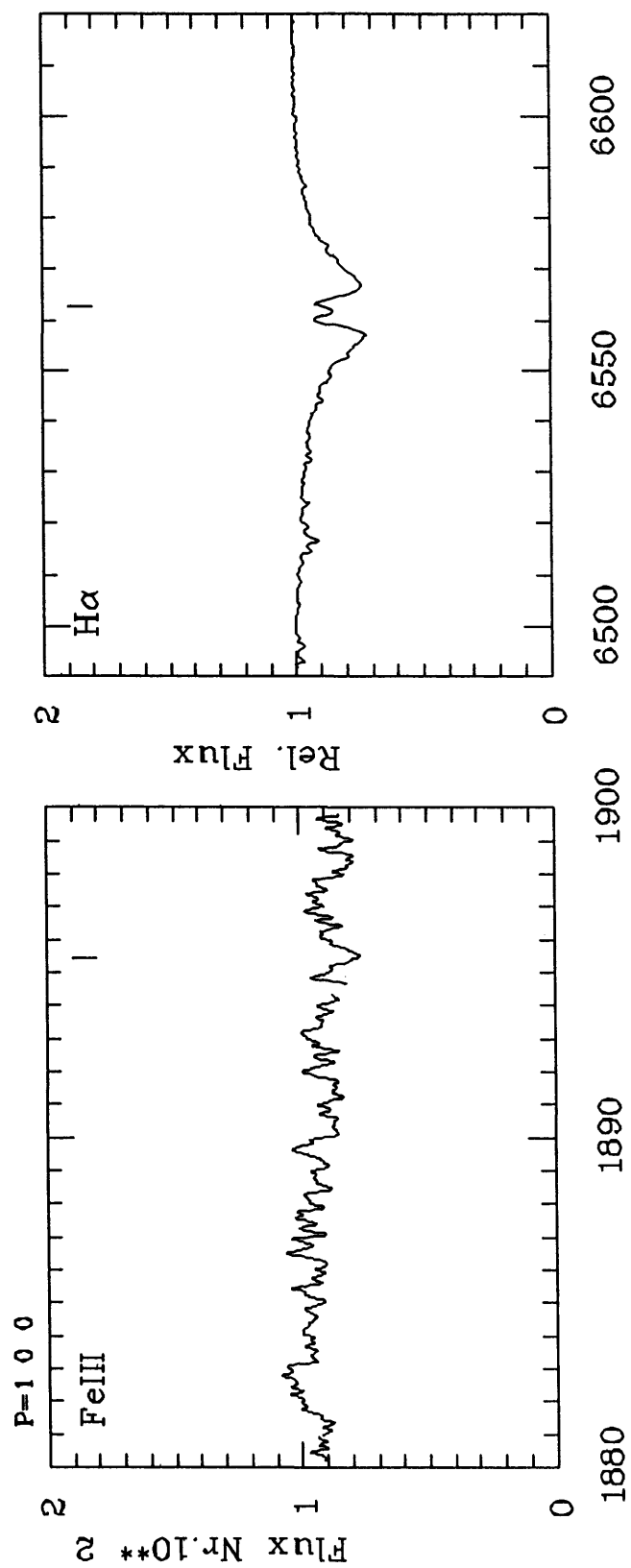


IUE 3 20852 L 83.08.30

OHP R CCD20010 88.03.25

HD 166014 B9.5IIIe

vsini 160



IUE 3 20852 L 83.08.30

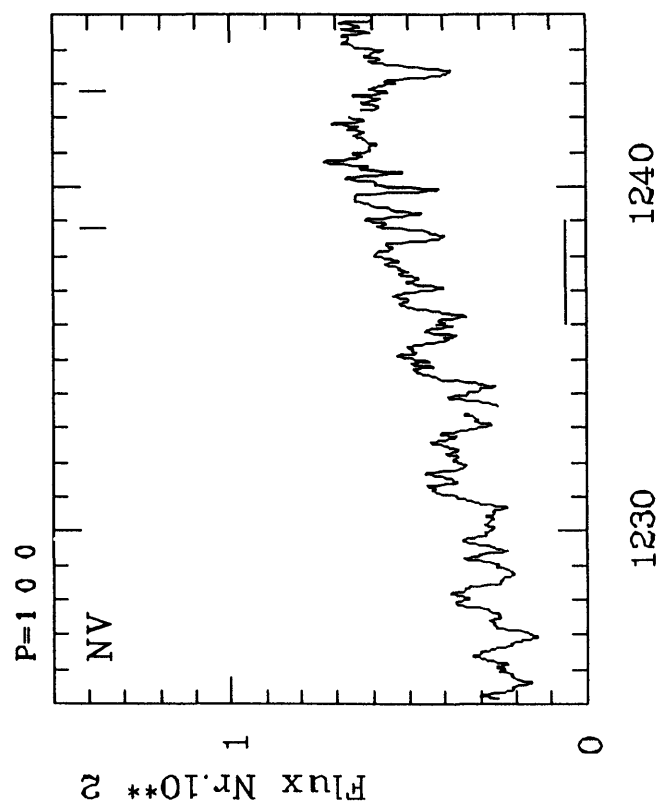
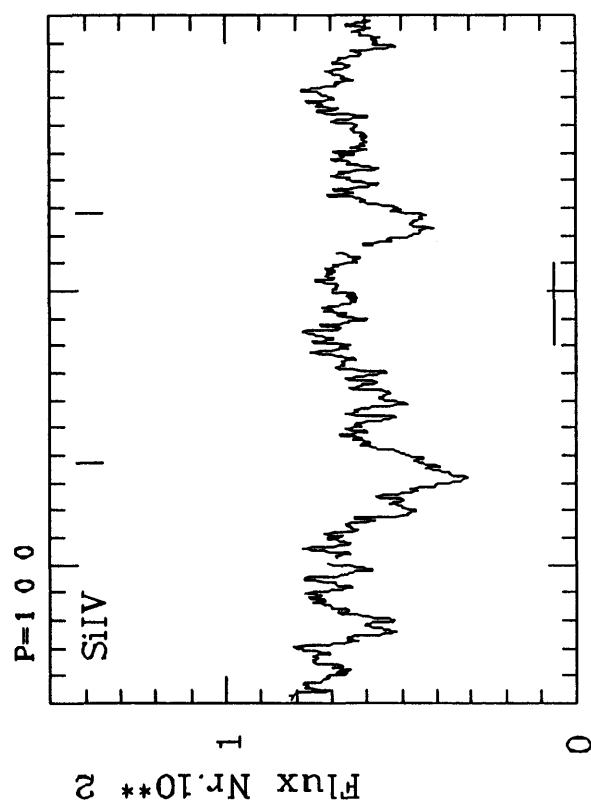
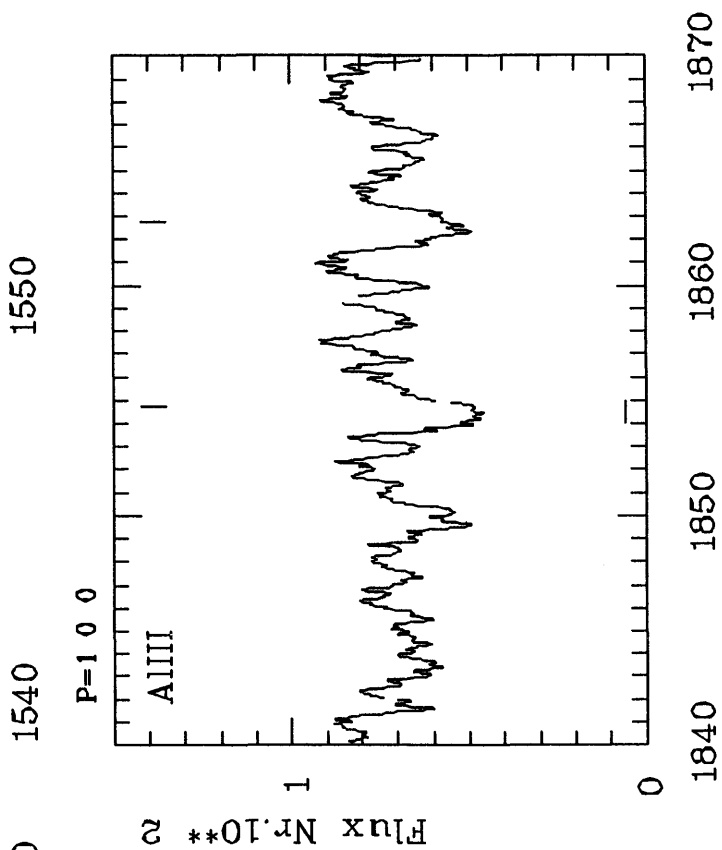
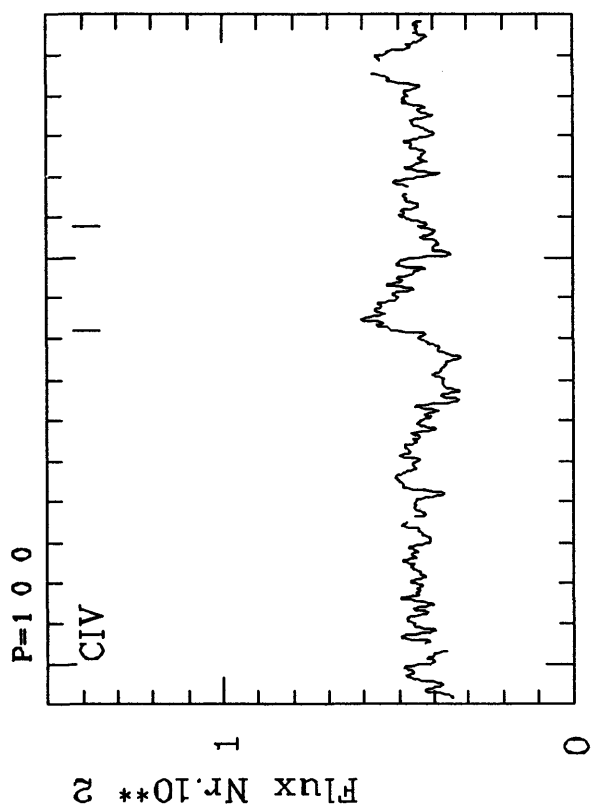
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OHP R CCD20010 88.03.25

HD 167128 B3IIIe

vsini 50



IUE 3 31220 L 87.06.20

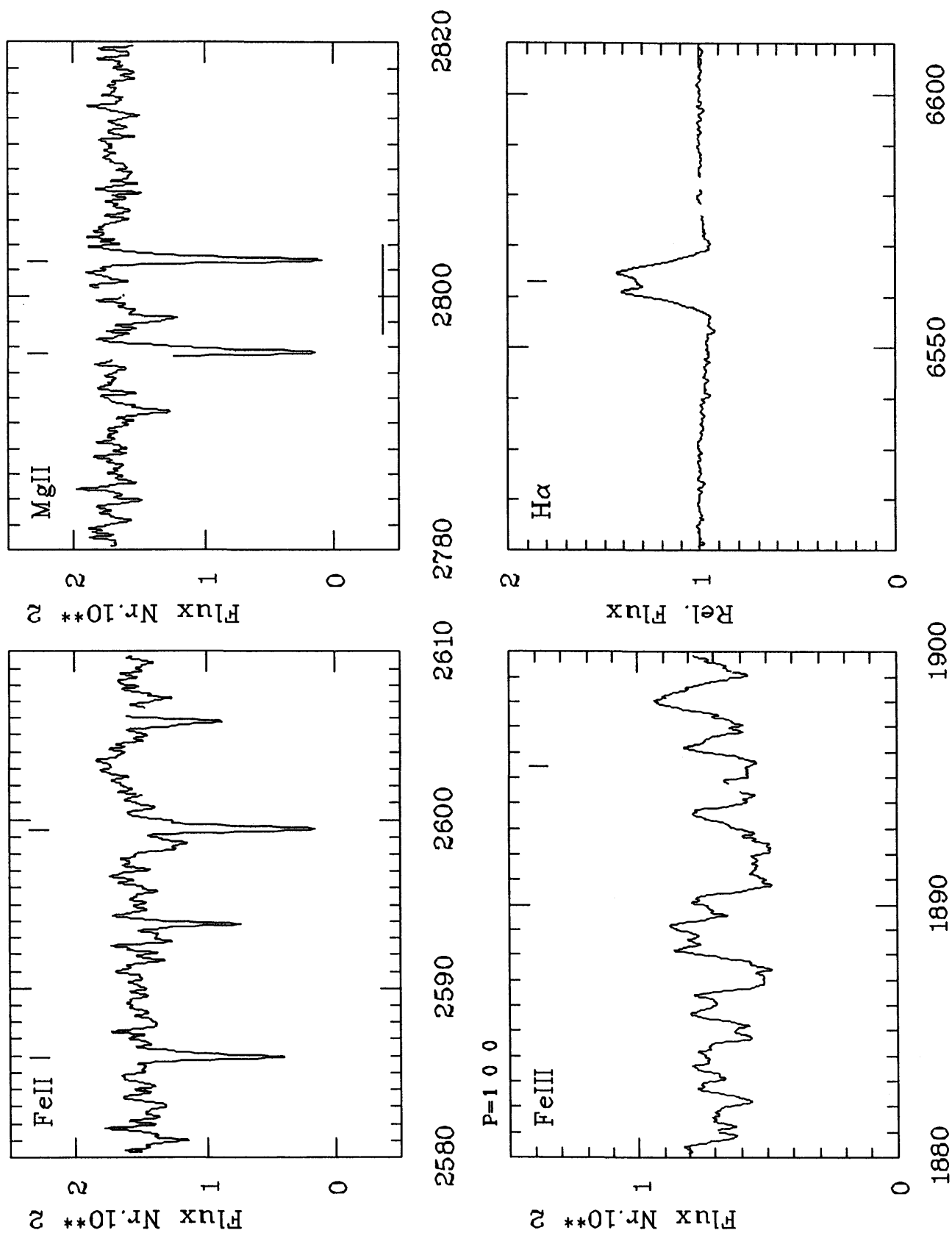
IUE 1 11046 L 87.06.20

ESO R G8682

77.08.26

HD 167128 B3IIIe

vsini 50



IUE 3 31220 L 87.06.20

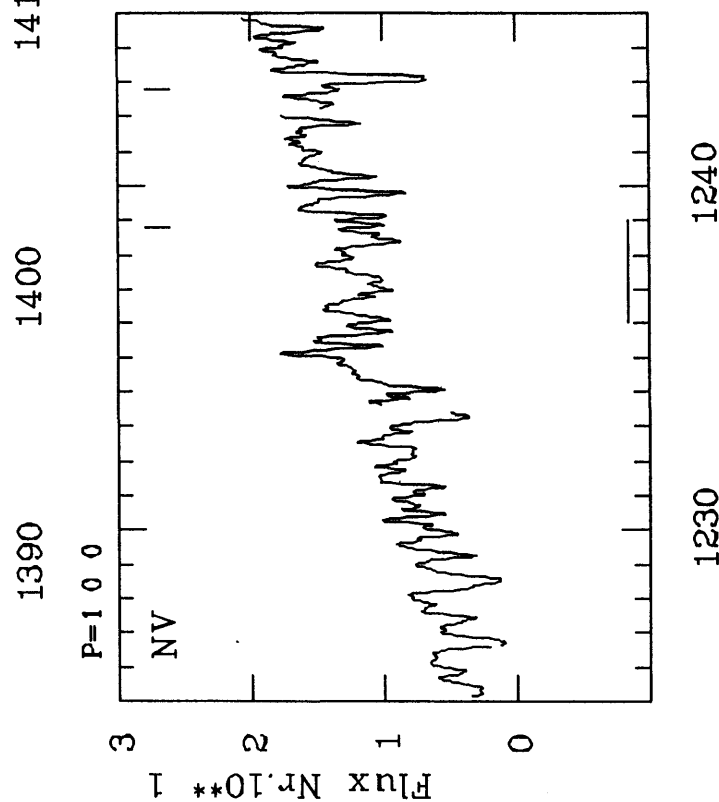
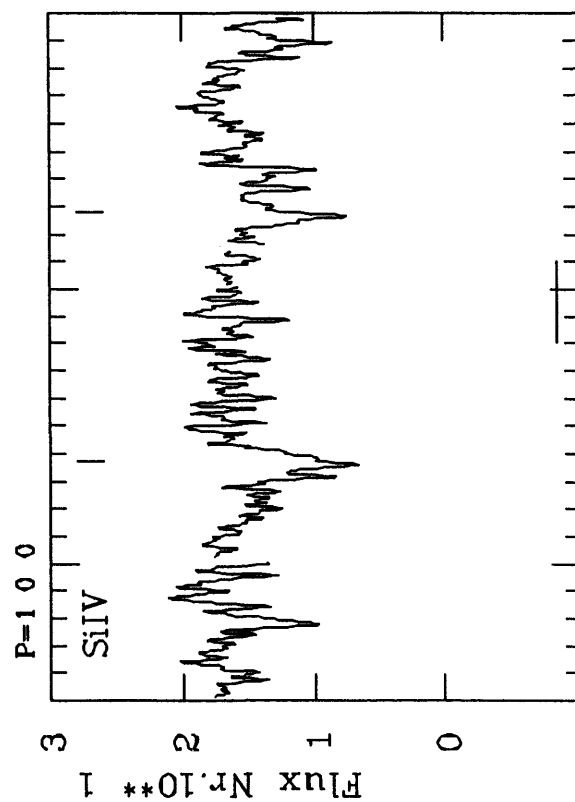
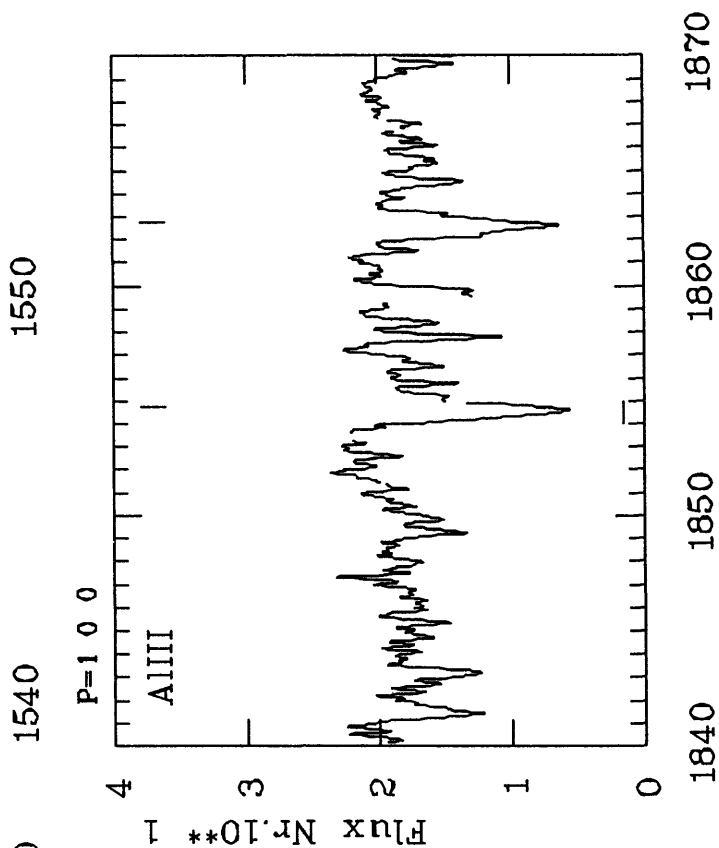
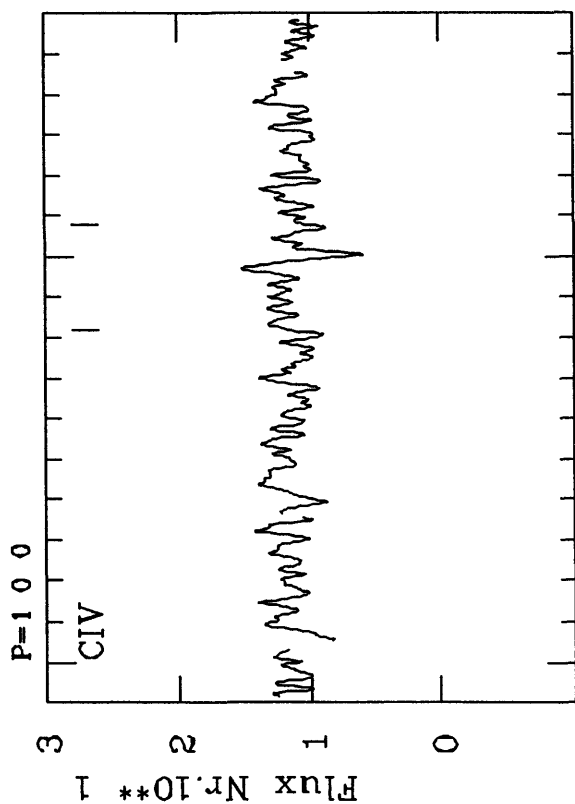
IUE 1 11046 L 87.06.20

ESO R G8682

77.08.26

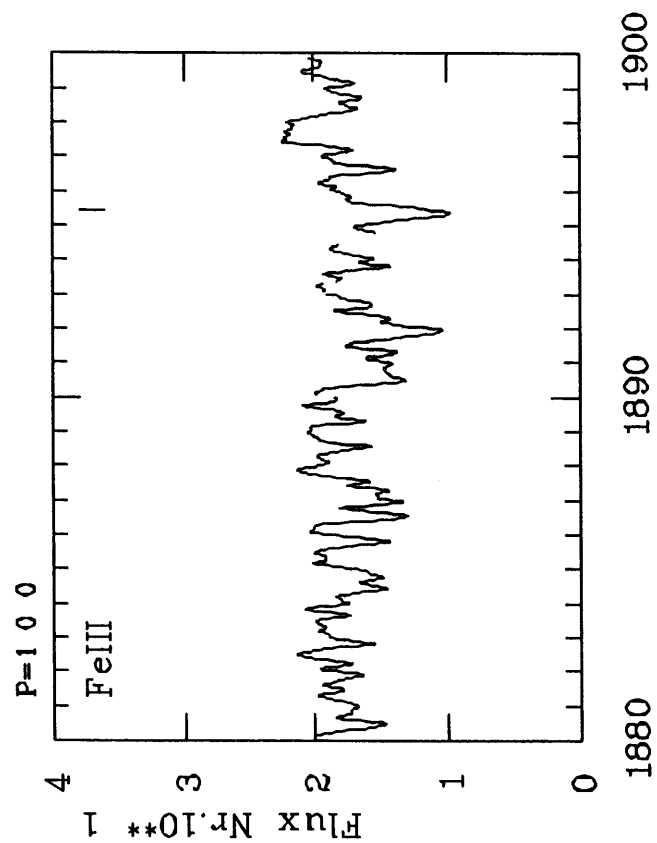
HD 168957 B3Ve

vsini 100



HD 168957 B3Ve

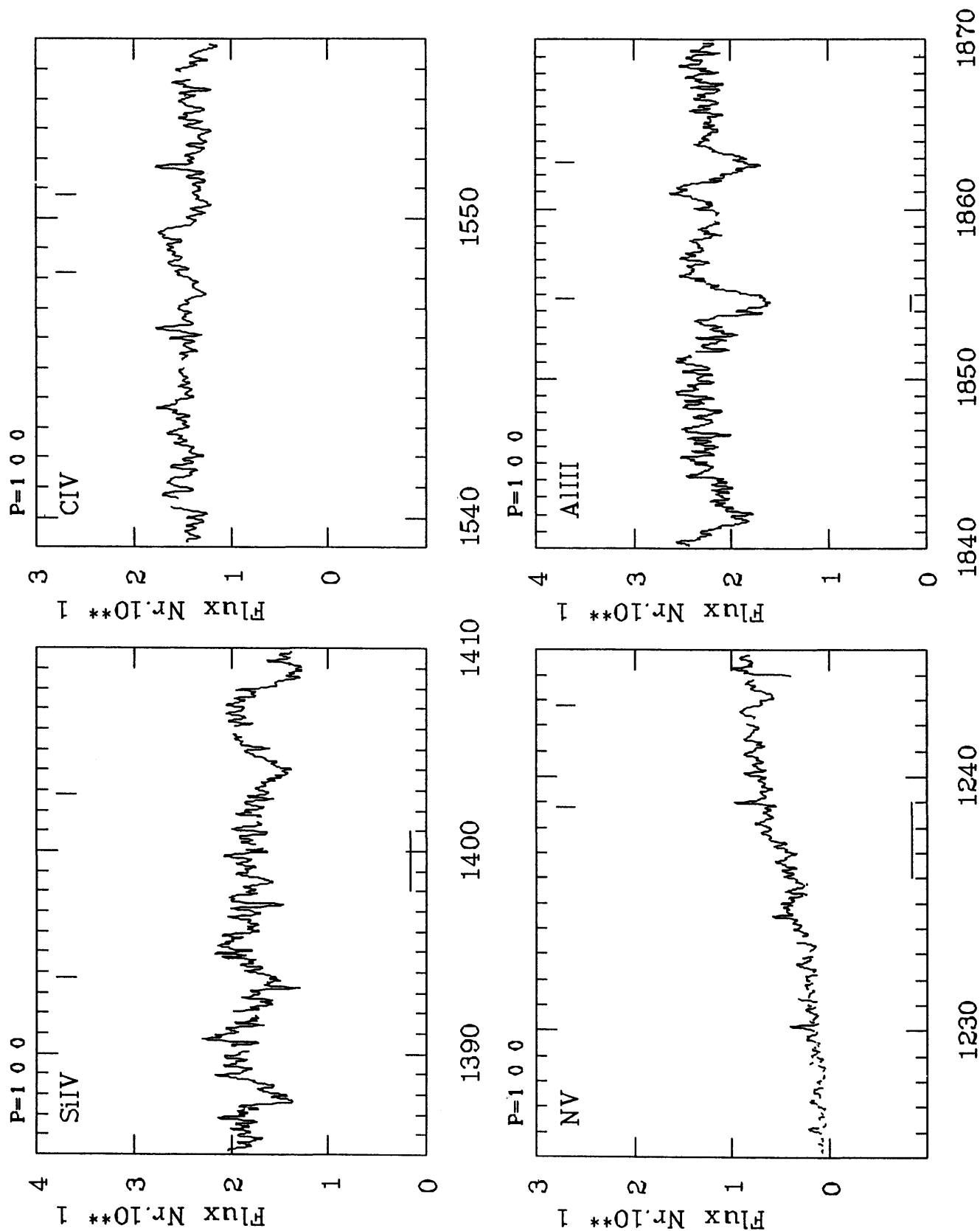
vsini 100



IUE 3 15973 L 82.01.06

HD 169033 B8Ve

vsini 200



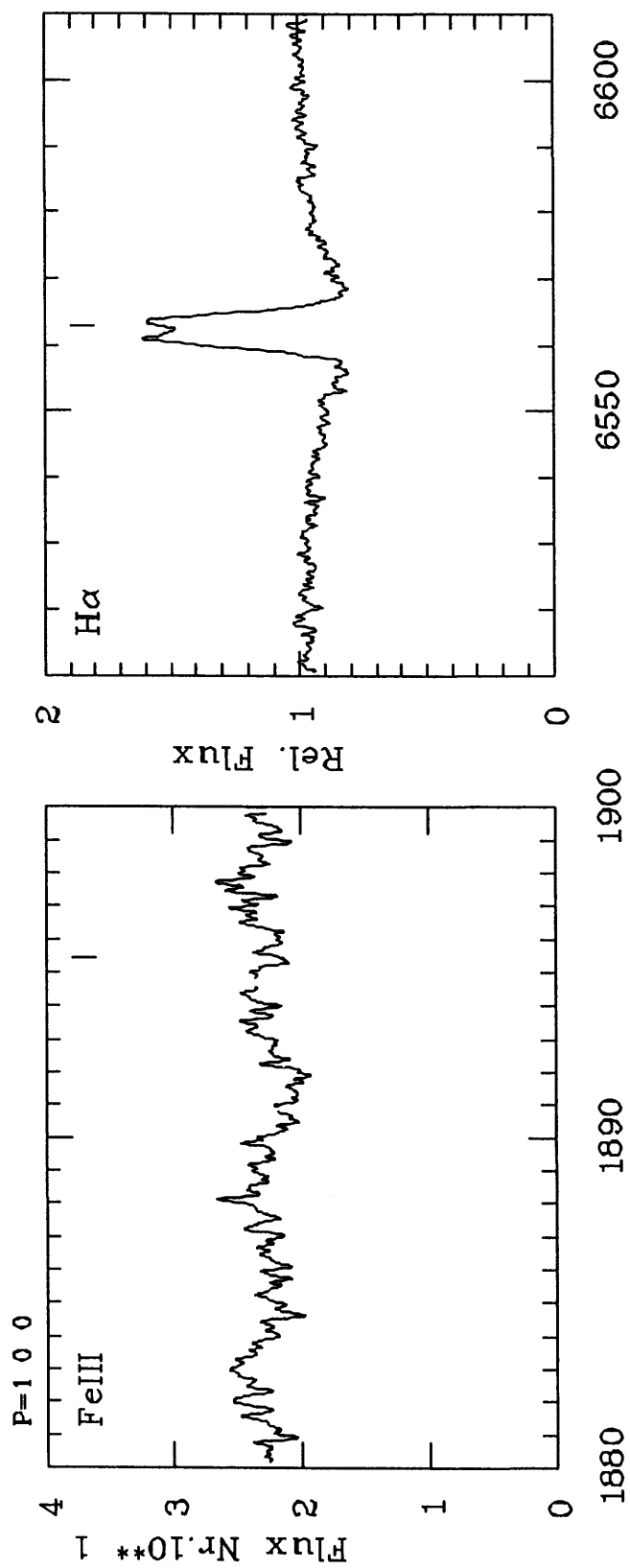
IUE 3 19929 L 83.05.08

ESO R F9254

88.04.07

HD 169033 B8Ve

vsini 200



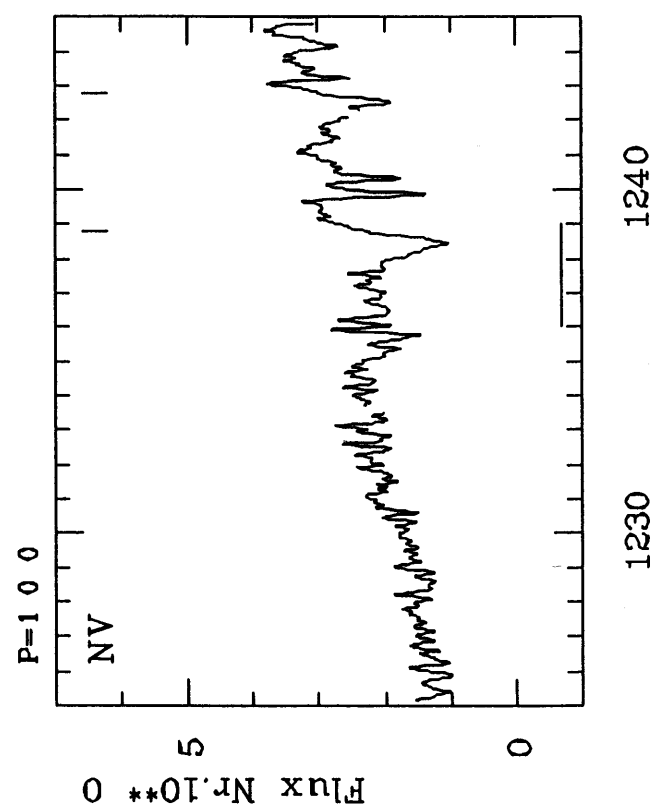
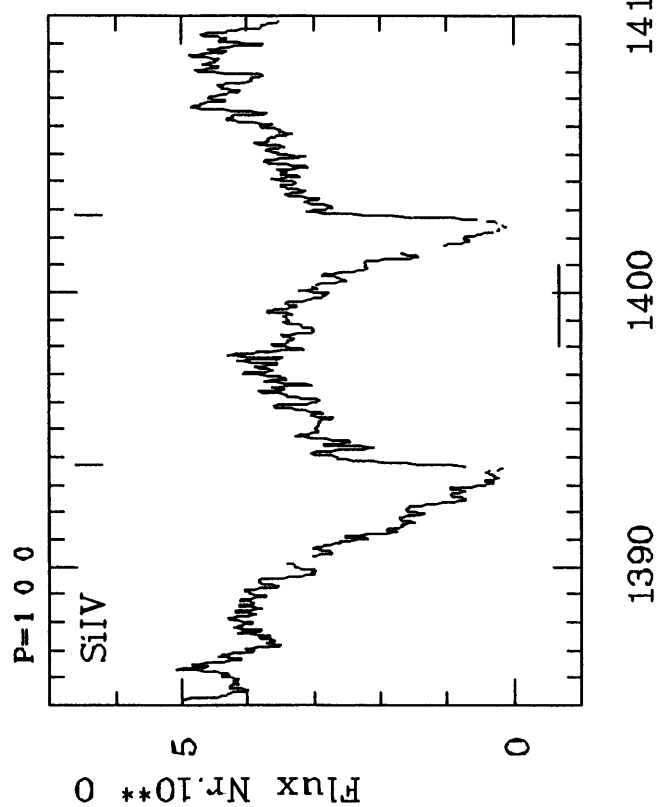
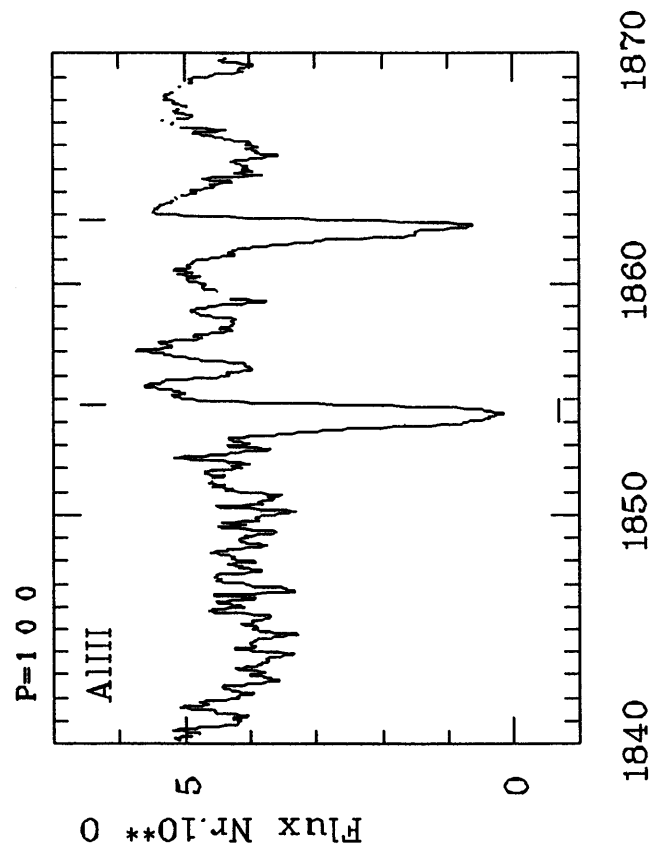
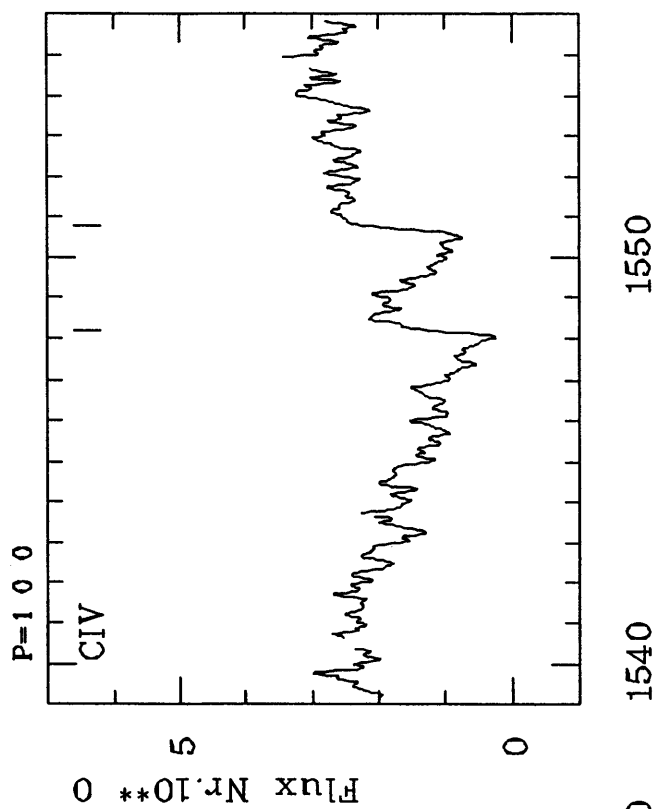
IUE 3 19929 L 83.05.08

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ESO R F9254

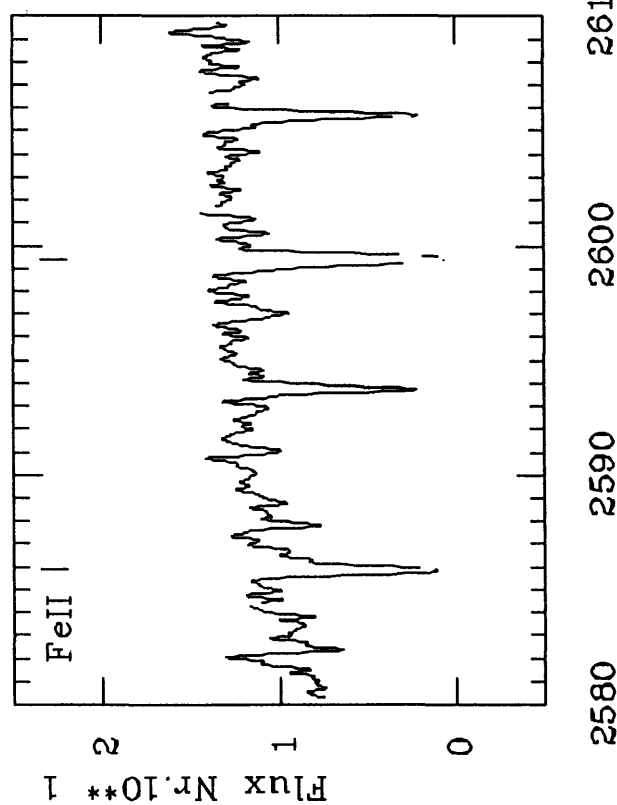
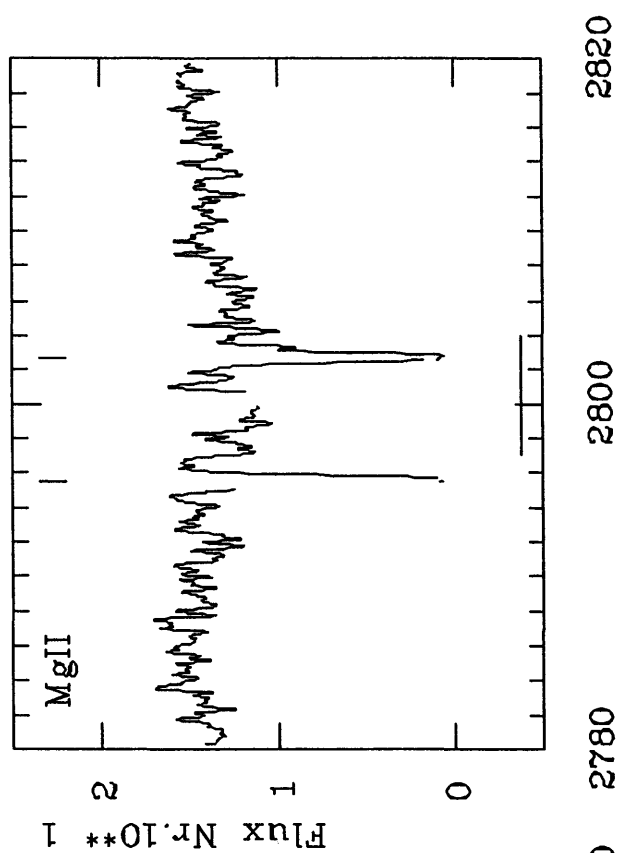
88.04.07

HD 173219 B1Vnpe

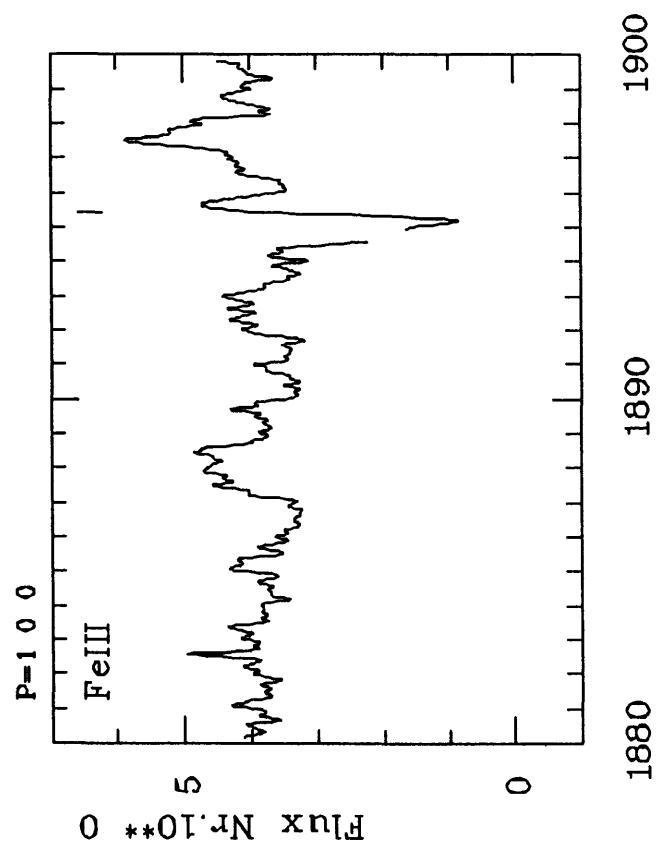


IUE 3 25654 L 85.04.10
 IUE 1 02997 L 84.03.20

HD 173219 B1Vnpe



IUE 3 25654 L 85.04.10
 IUE 1 02997 L 84.03.20

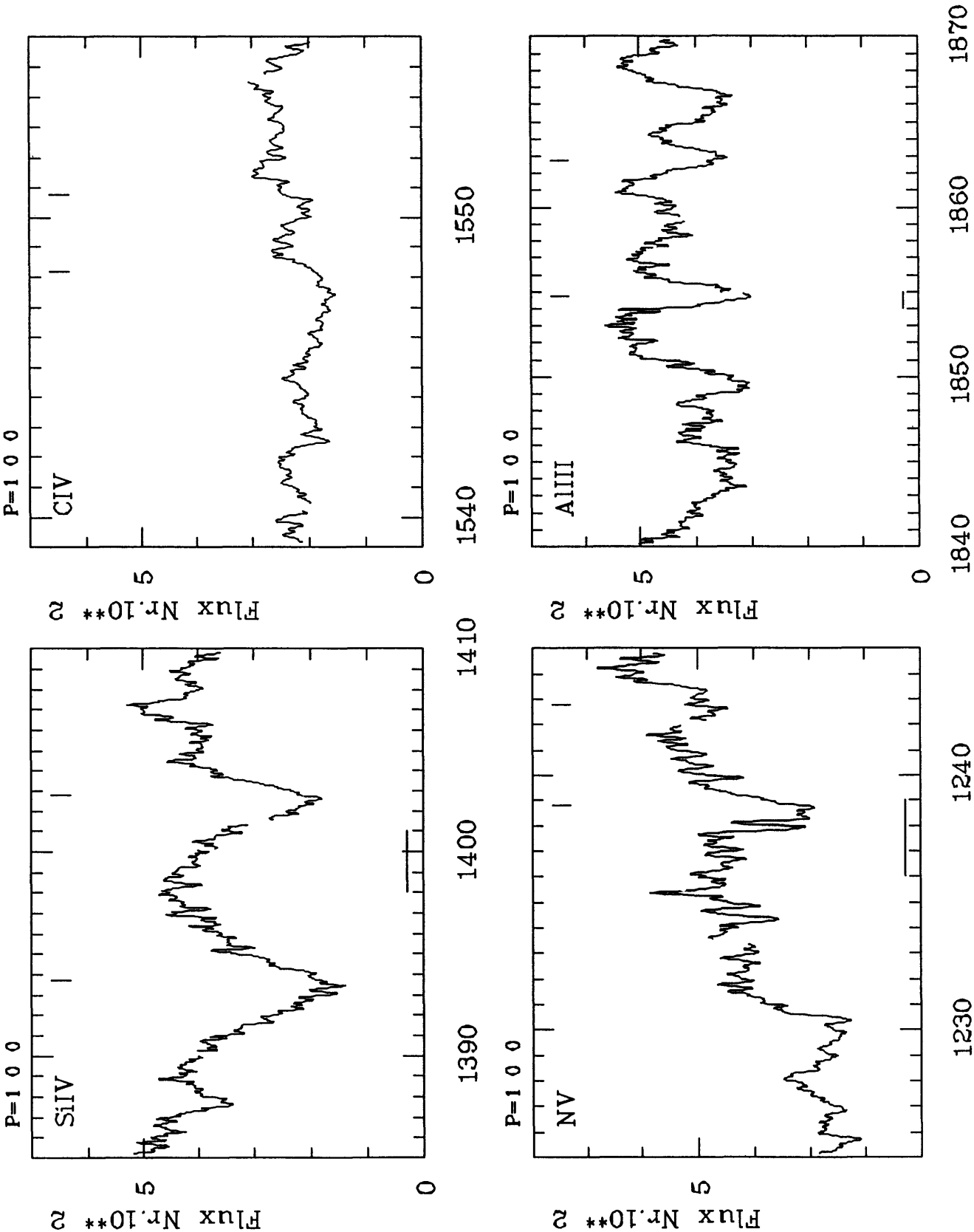


2580 2590 2600 2610 2780 2800 2820

1880 1890 1900

HD 173948 B1.5IIIe

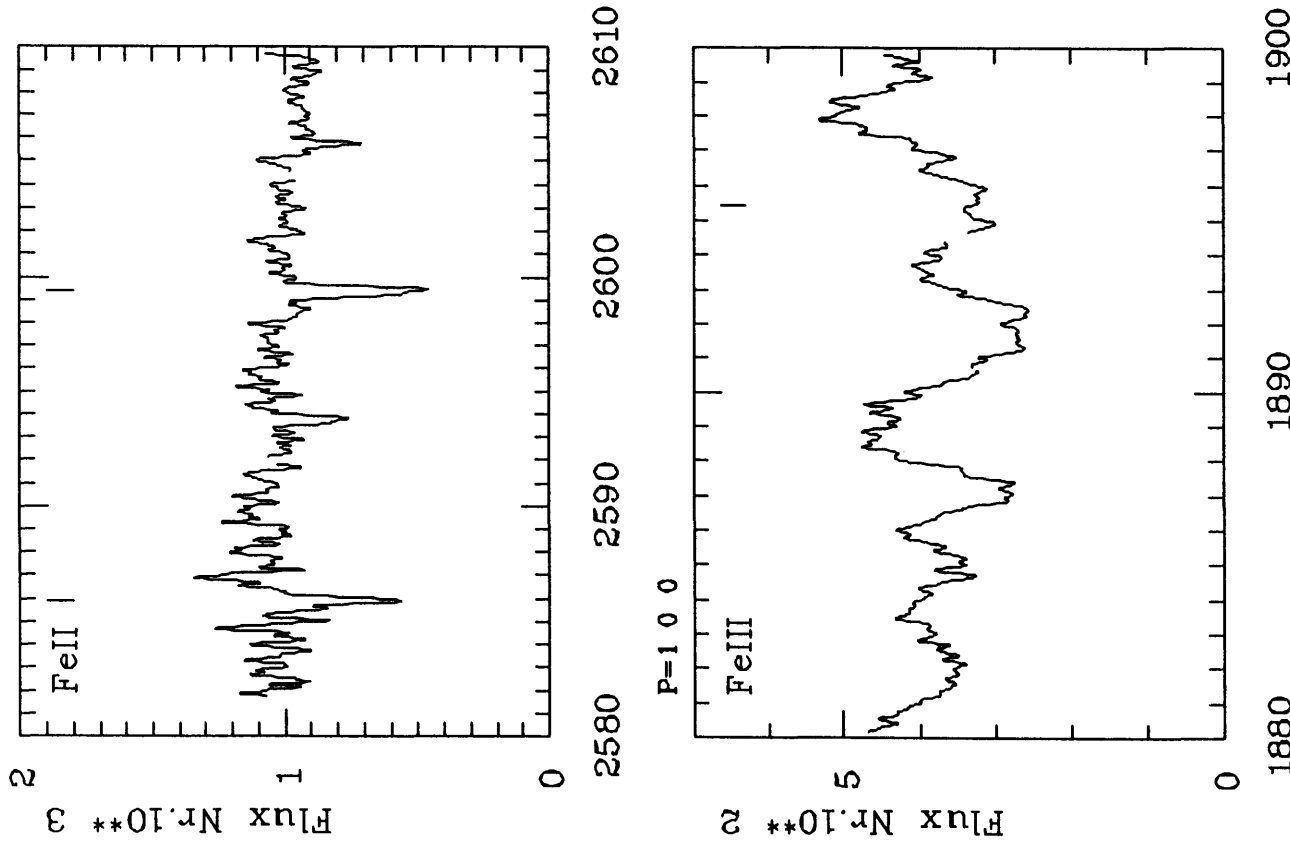
vsini 170



IUE 3 17552 L 82.08.01
IUE 2 13829 L 82.08.01
|
|

HD 173948 B1.5IIIe

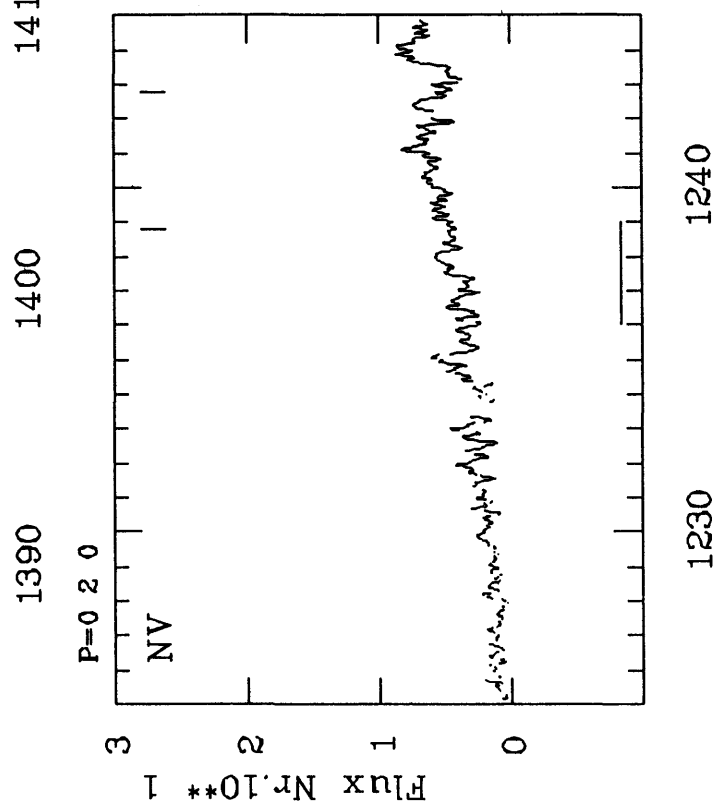
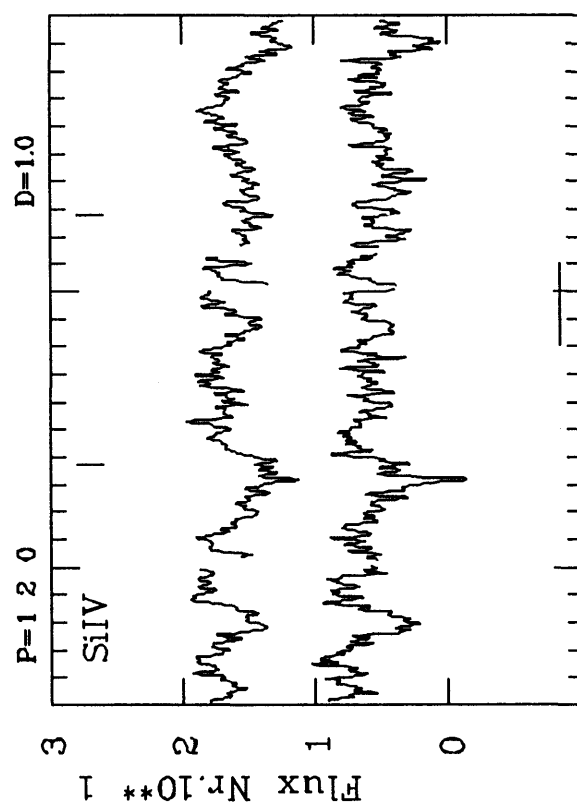
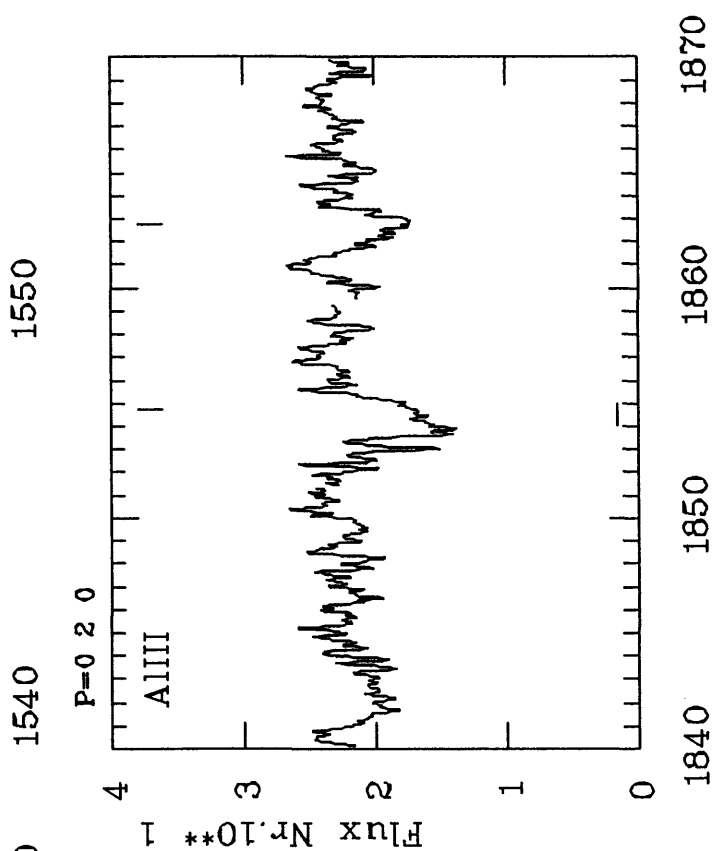
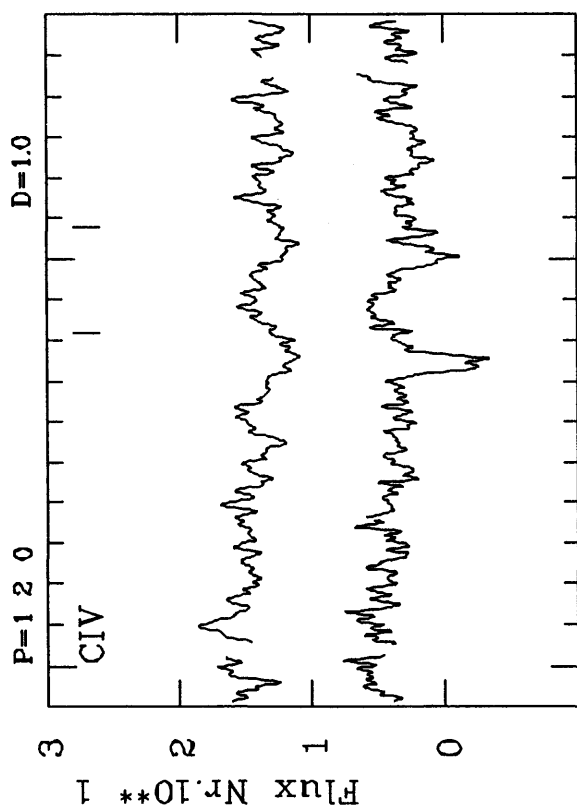
vsini 170



IUE 3 17552 L 82.08.01
IUE 2 13829 L 82.08.01

HD 175869 B8IVe

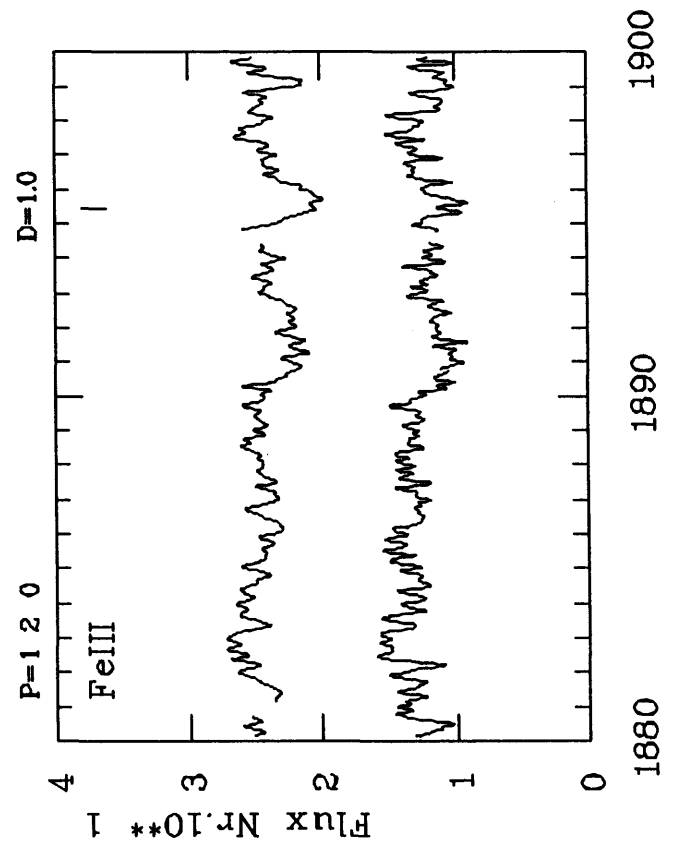
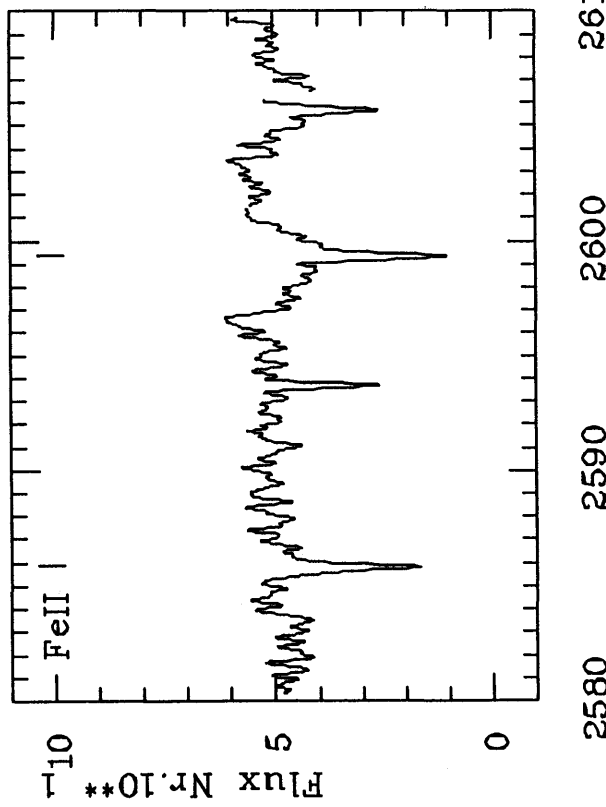
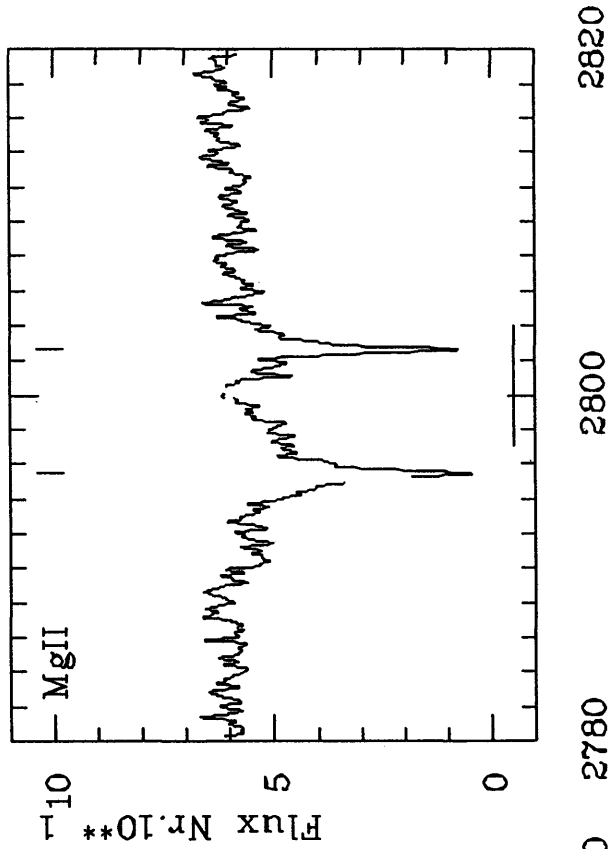
vsini 150



IUE 3 14505 L 81.07.18 - 3 26180 L 85.06.16
 IUE 1 06226 L 85.06.16

HD 175869 B8IVe

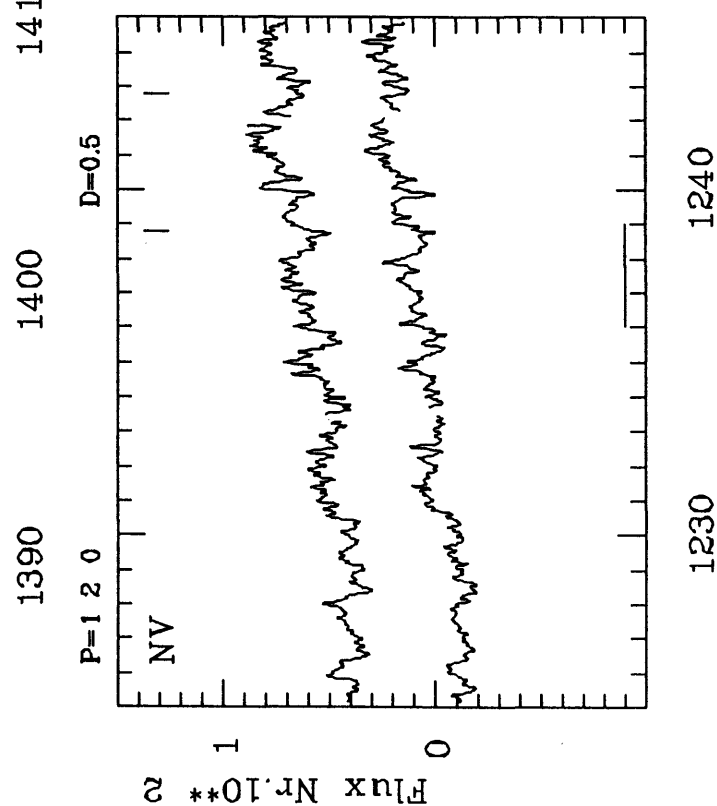
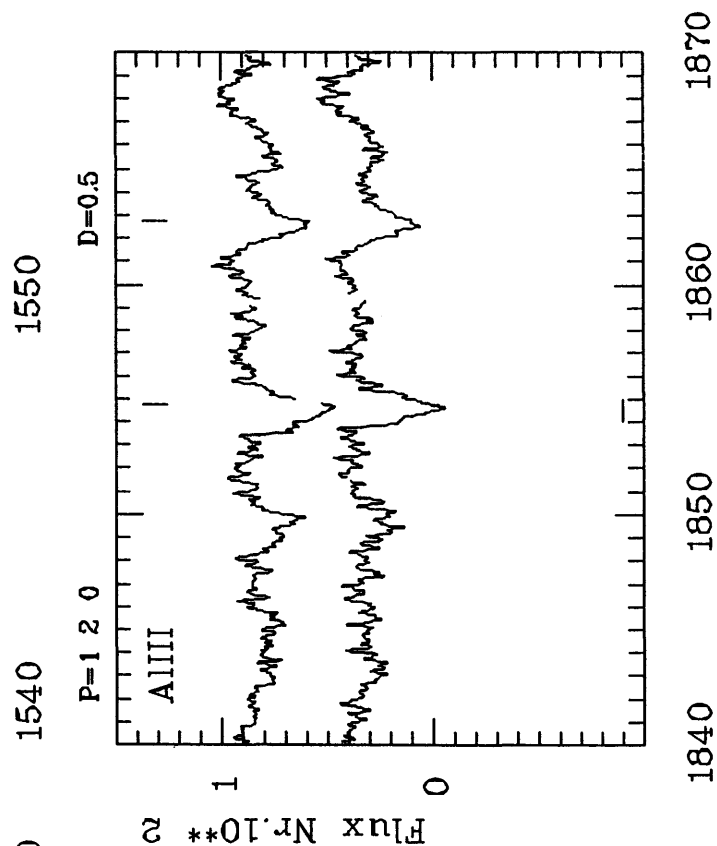
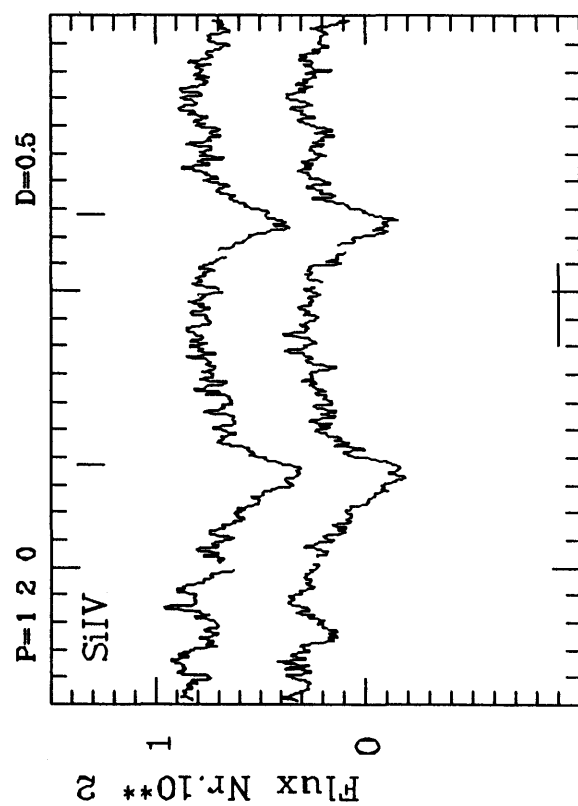
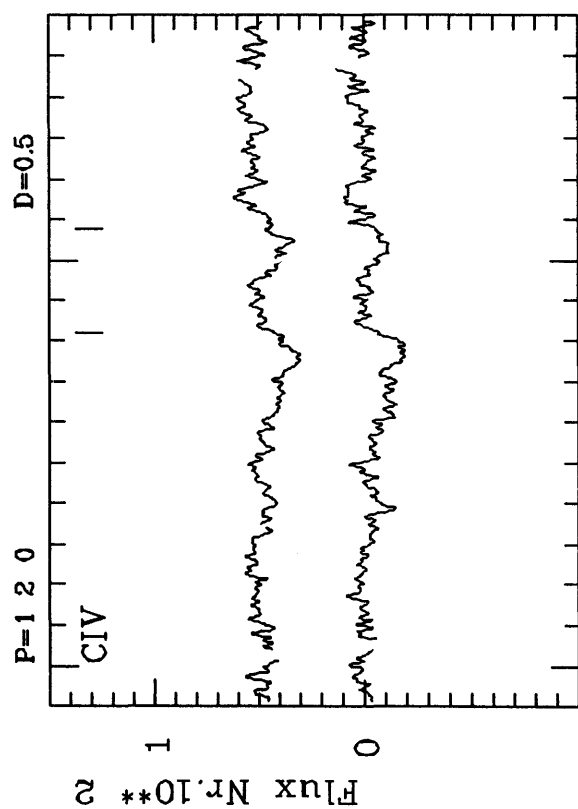
vsini 150



IUE 3 14505 L 81.07.18 - 3 26180 L 85.06.16
 IUE 1 06226 L 85.06.16

HD 178175 B2Ve

vsini 120



IUE 3 18365 L 82.10.22 - 3 19332 L 83.02.27

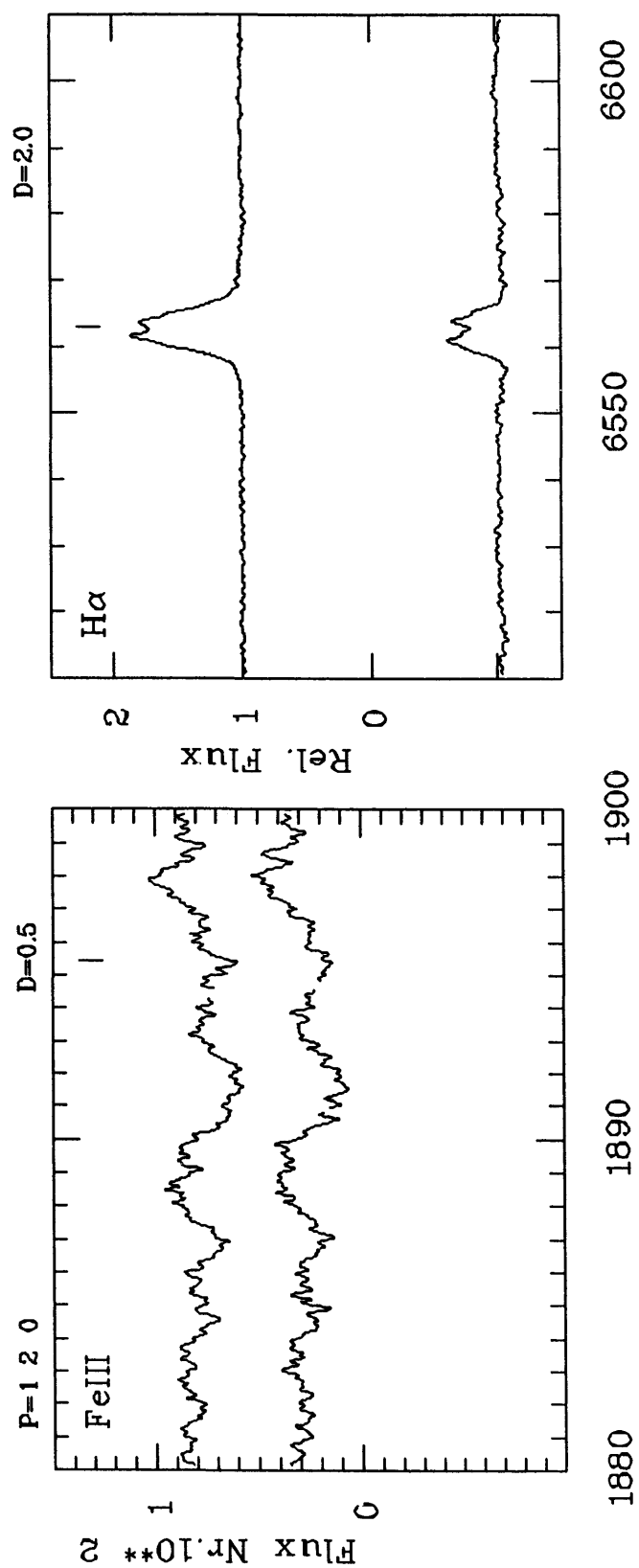
ESO R G8717

77.08.29 - ESO R G13858

88.10.2

HD 178175 B2Ve

vsini 120



IUE 3 18365 L 82.10.22 - 3 19332 L 83.02.27

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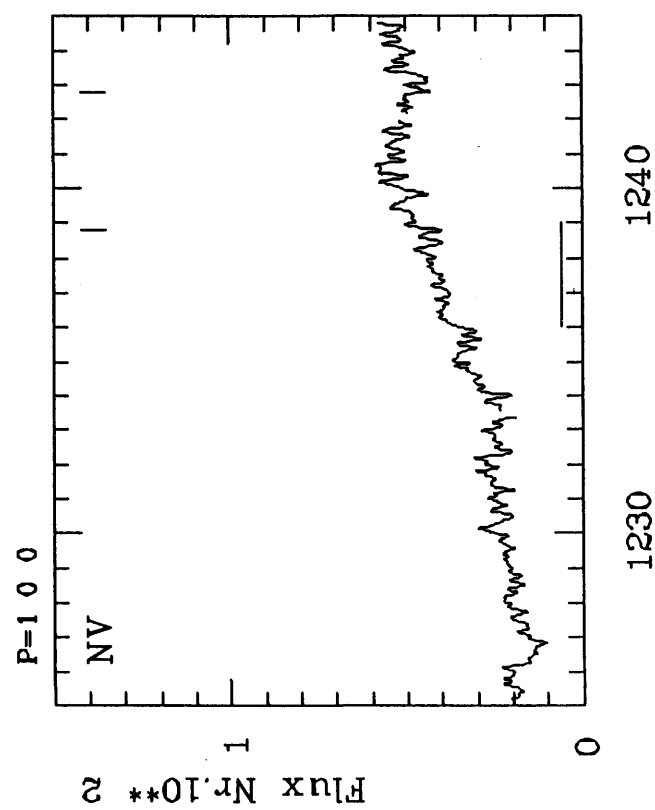
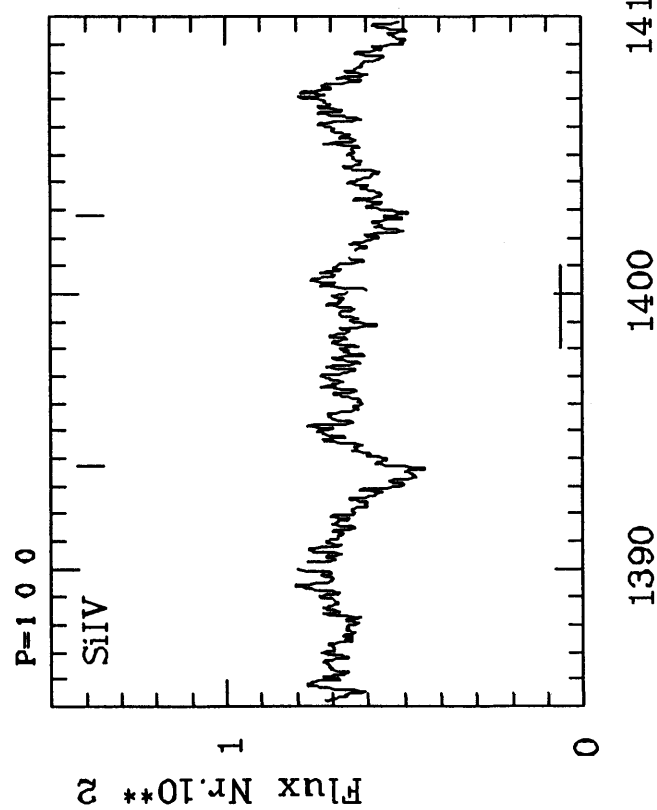
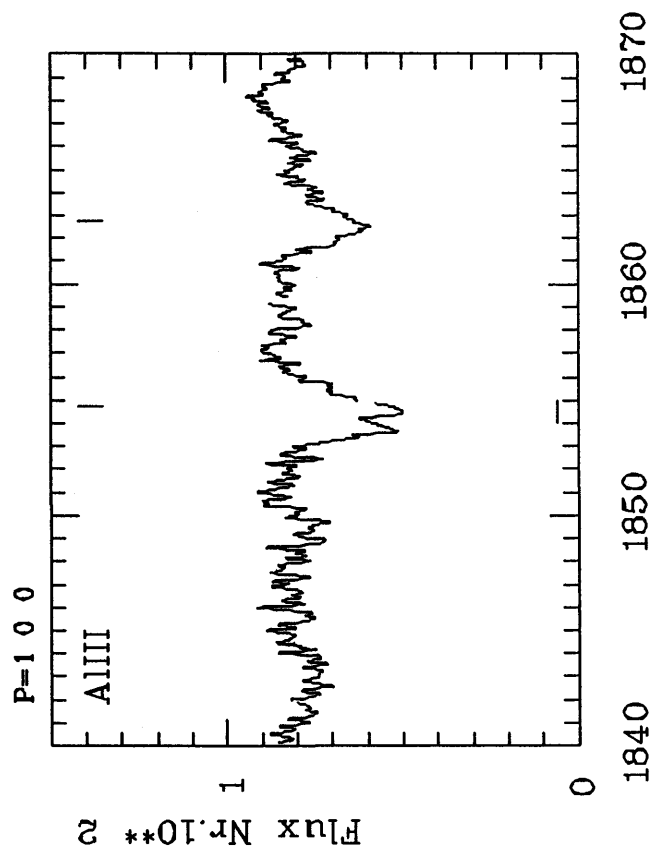
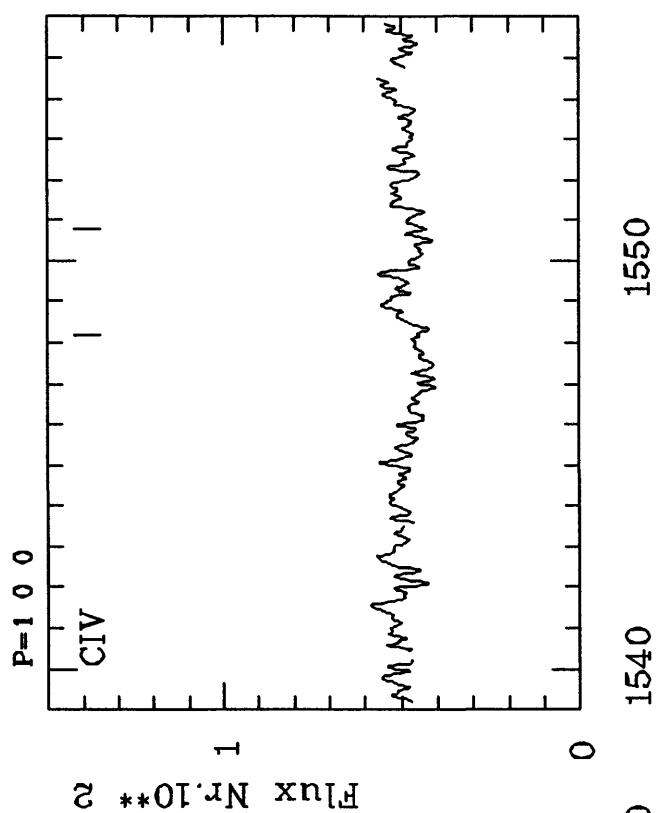
ESO R G8717

77.08.29 - ESO R G13858

88.10.2

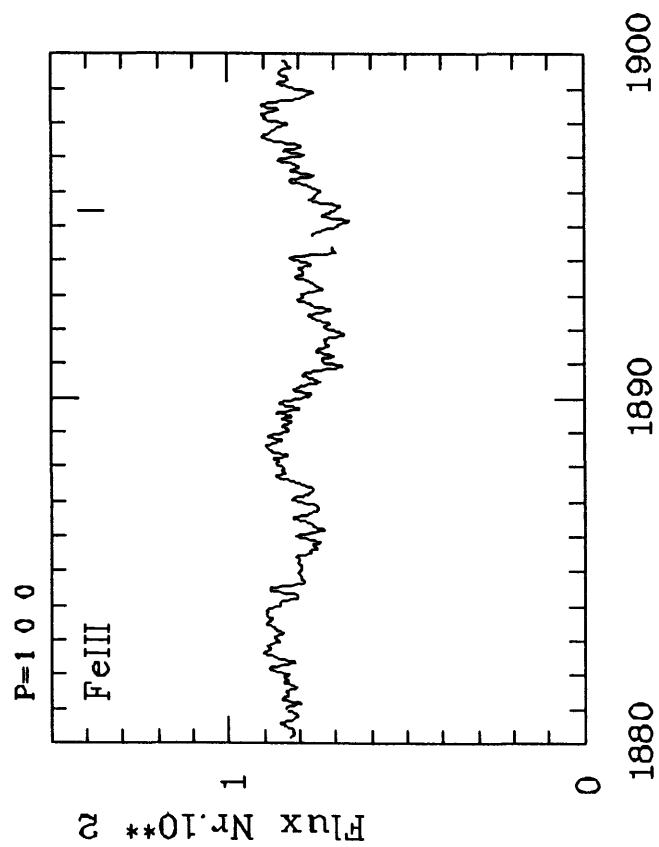
HD 178475 B5Ve

vsini 230



HD 178475 B5Ve

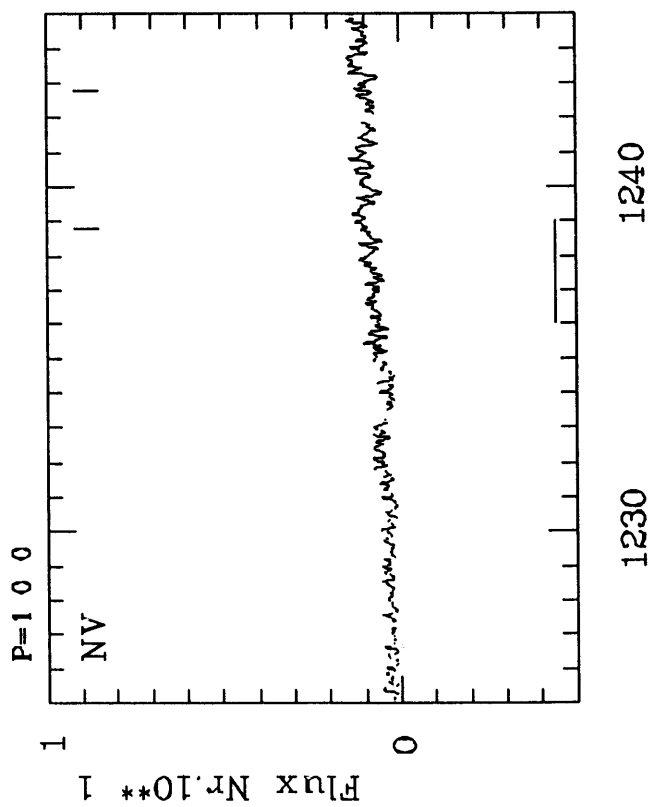
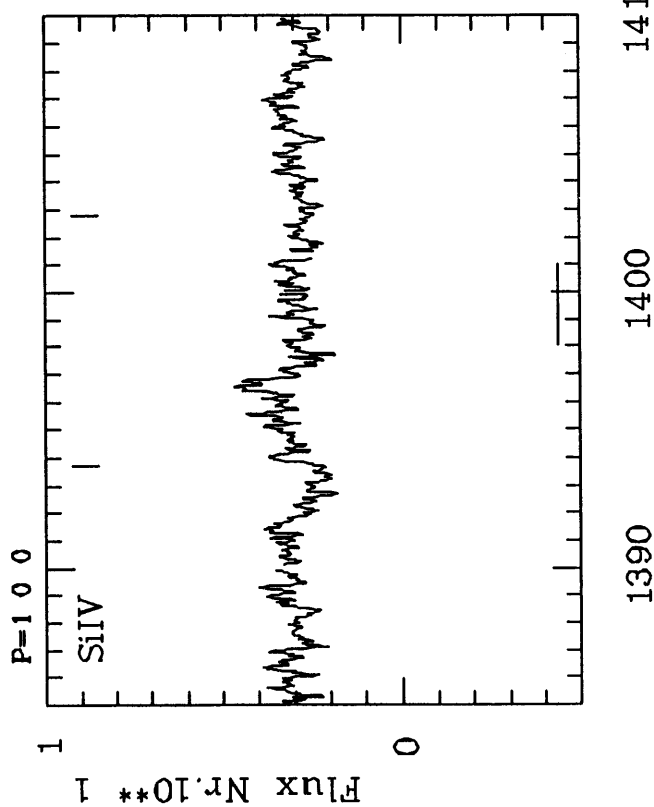
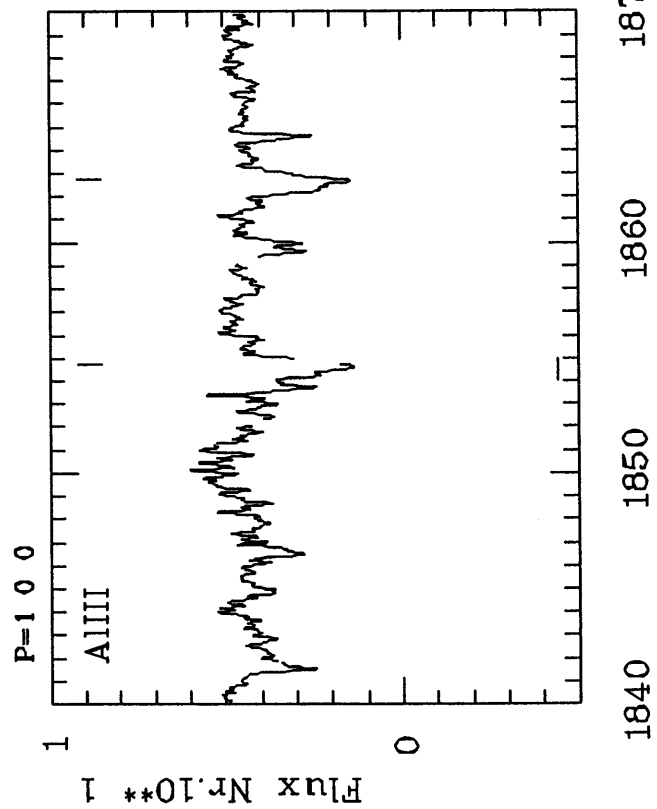
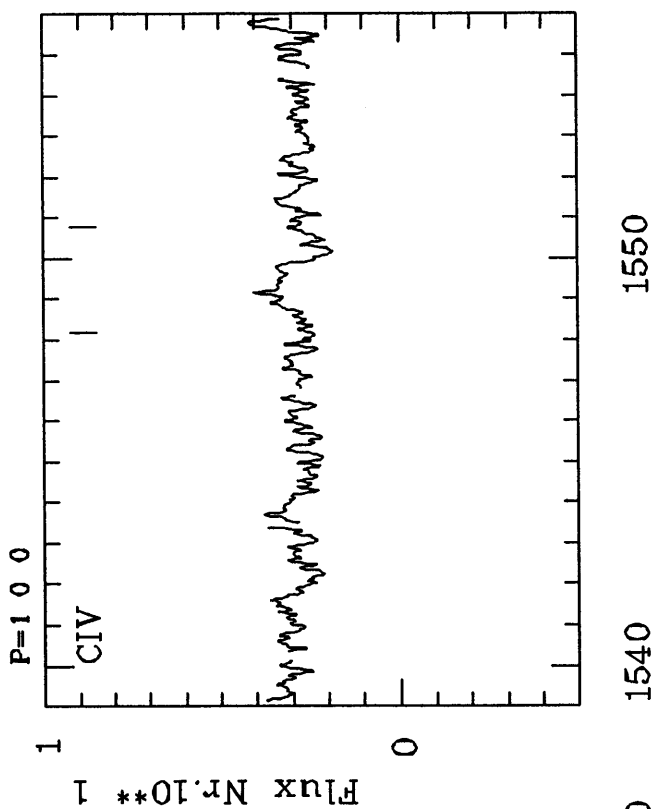
vsini 230



IUE 3 20851 L 83.08.30

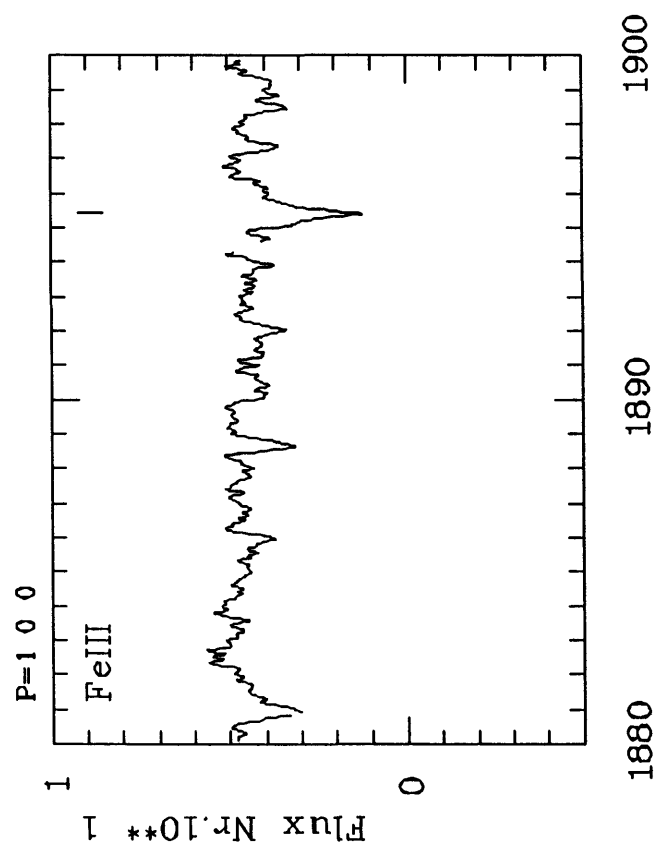
HD 179343 B9e

vsini 350



HD 179343 B9e

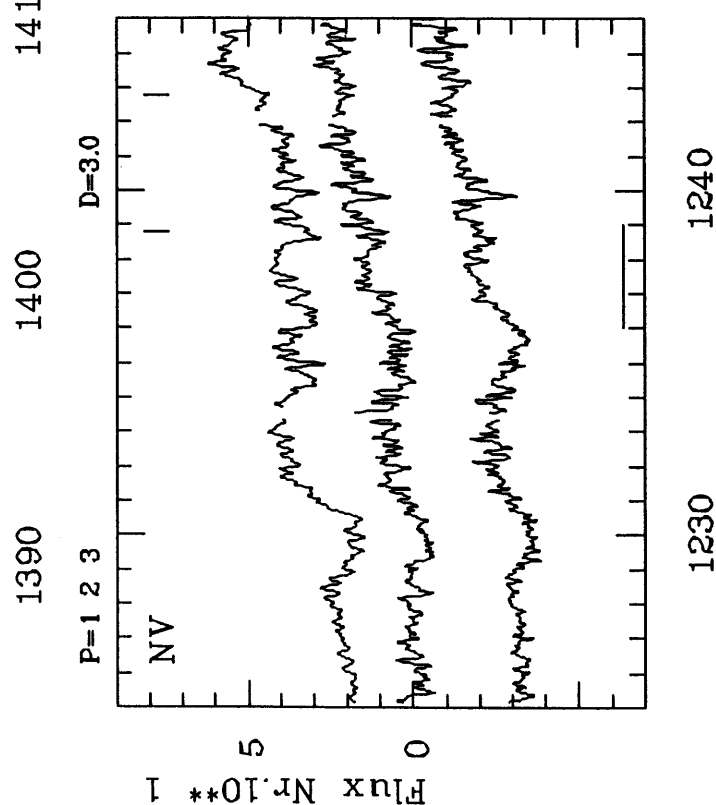
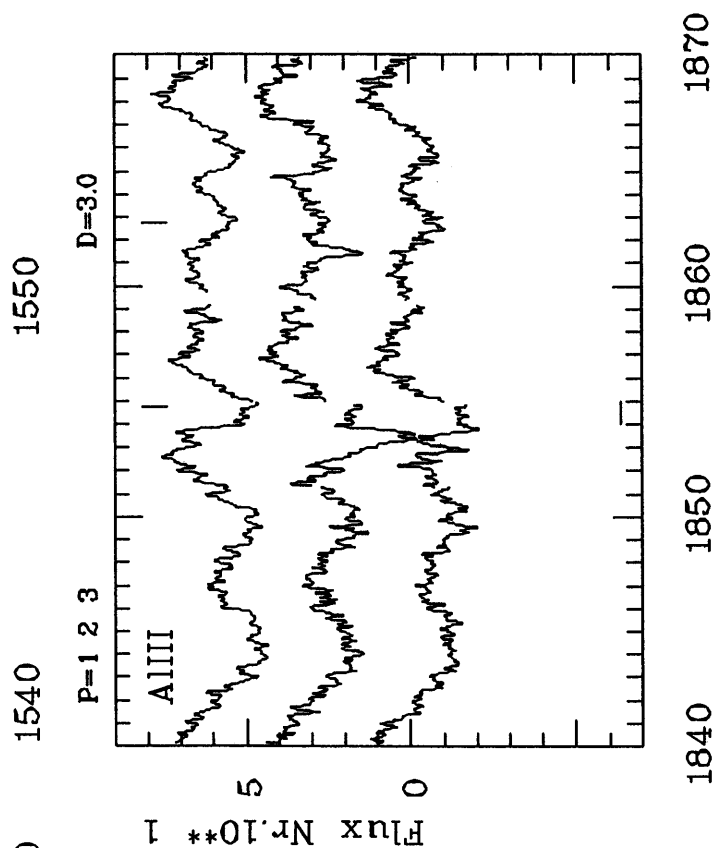
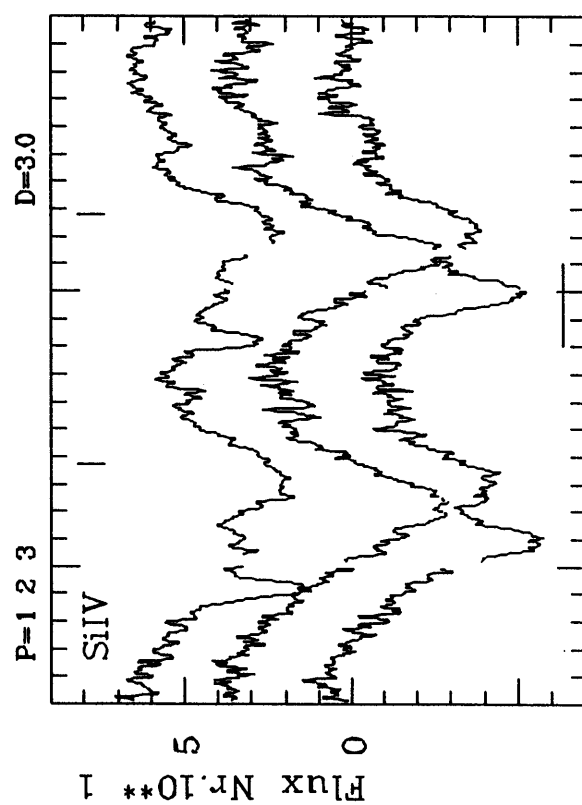
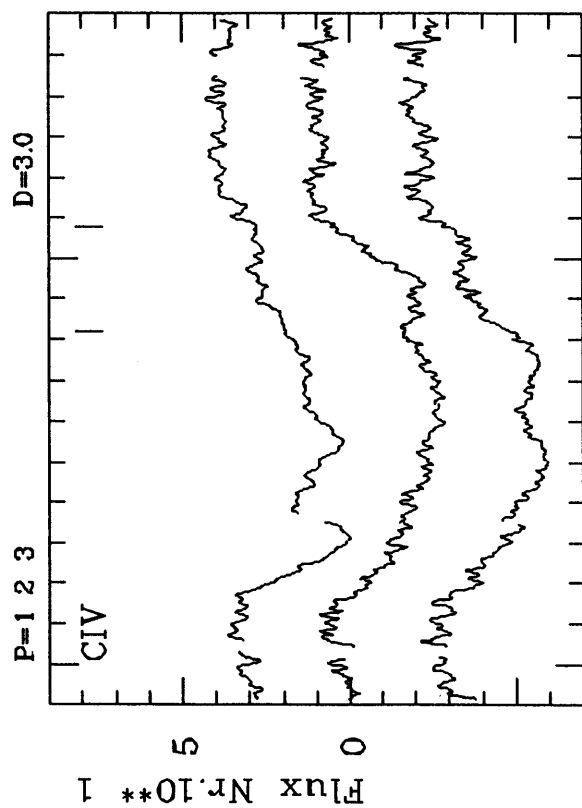
vsini 350



IUE 3 21154 L 83.09.24

HD 180968 B0.5IVe

vsini 330

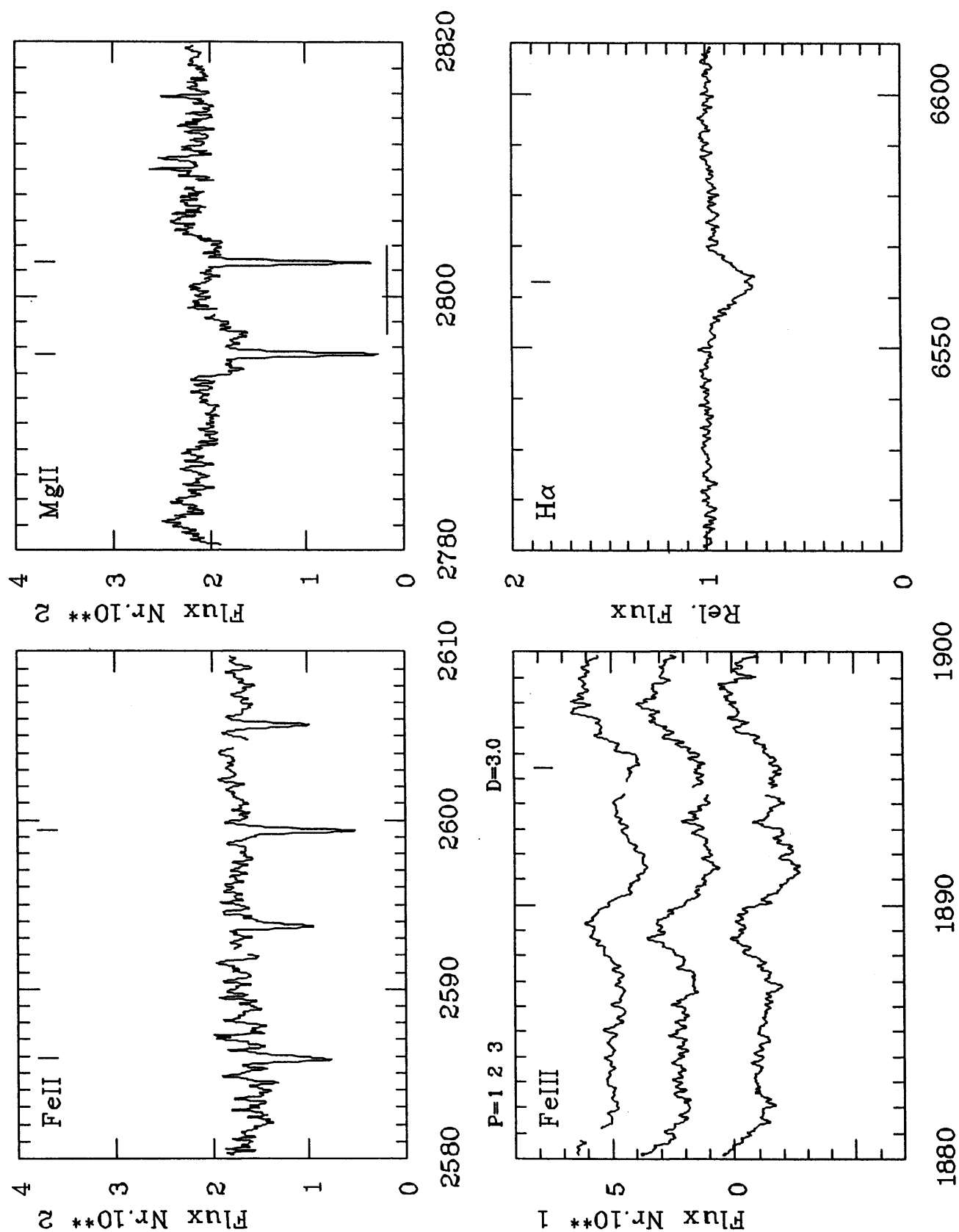


IVE 3 15214 L 81.10.09 - 3 18364 L 82.10.22 - 3 31511 L 87.08.08
 IVE 2 15141 L 83.01.29

OHP R GA8349 88.11.22

HD 180968 B0.5IVe

vsini 330

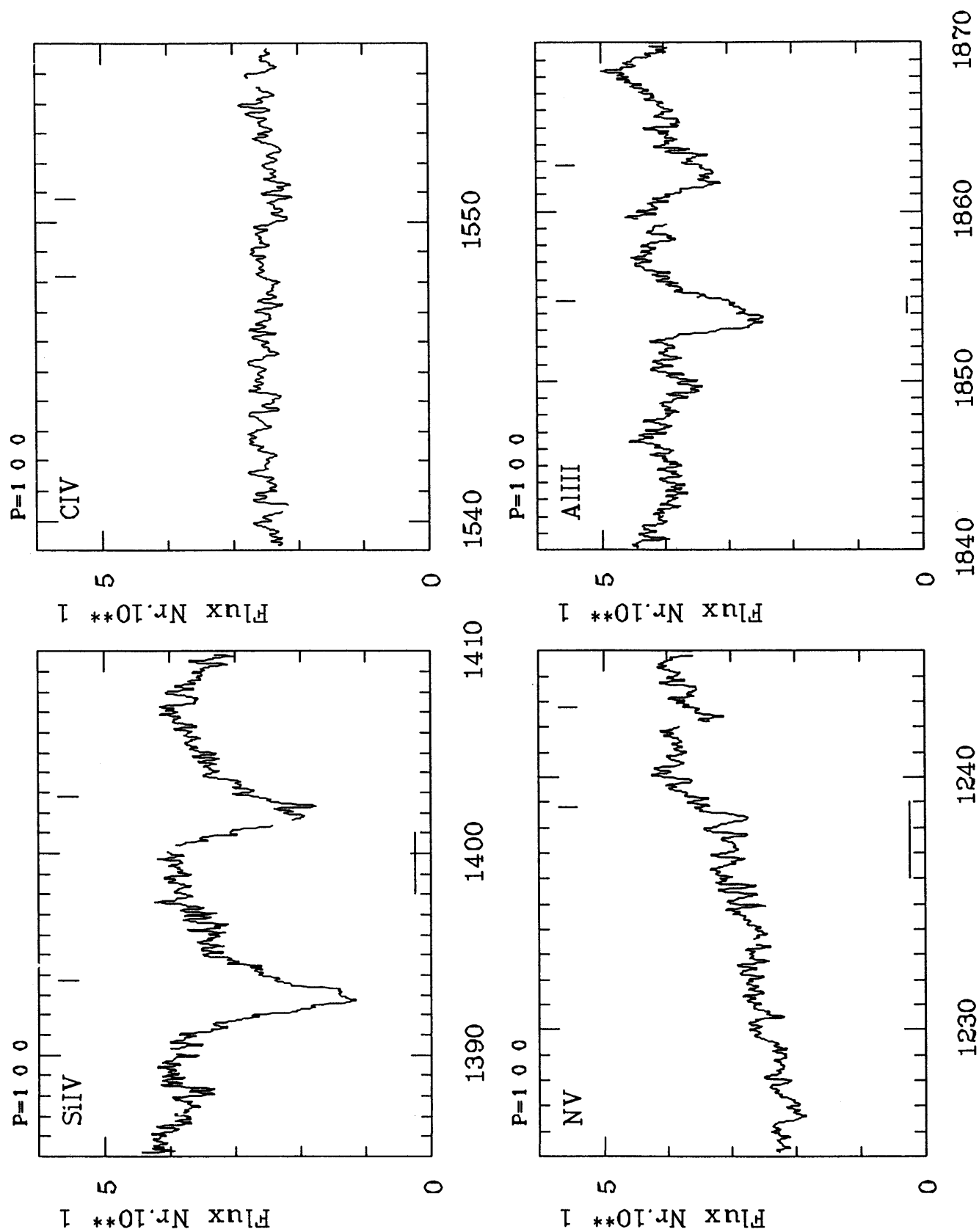


IUE 3 15214 L 81.10.09 - 3 18364 L 82.10.22 - 3 31511 L 87.08.08
 IUE 2 15141 L 83.01.29

OHP R GA8349 88.11.22

HD 183362 B3Ve

vsini 245



IUE 3 31218 L 87.06.20

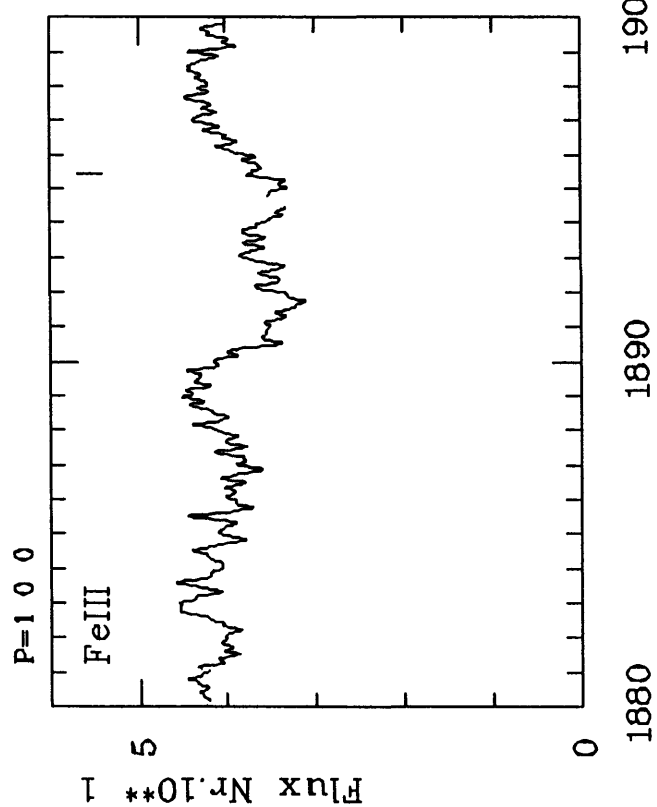
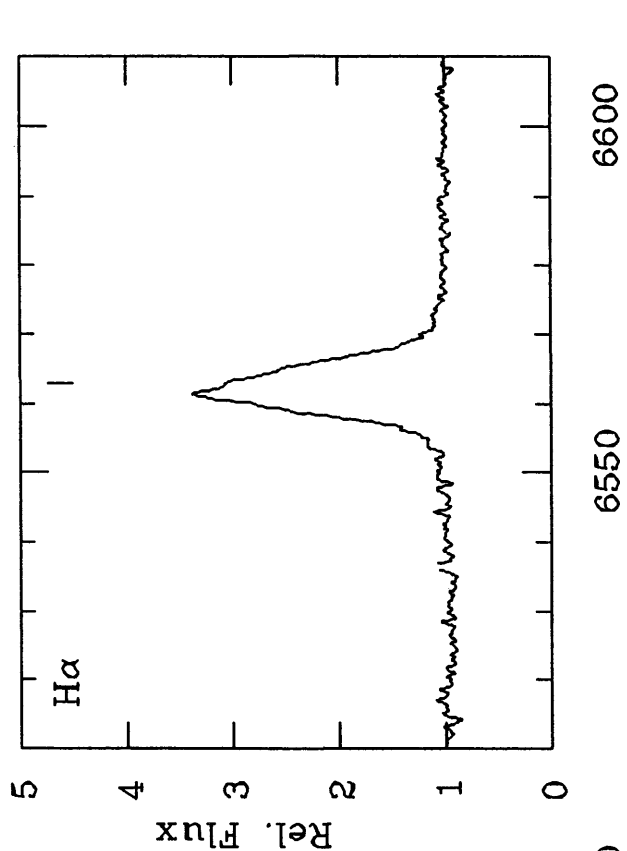
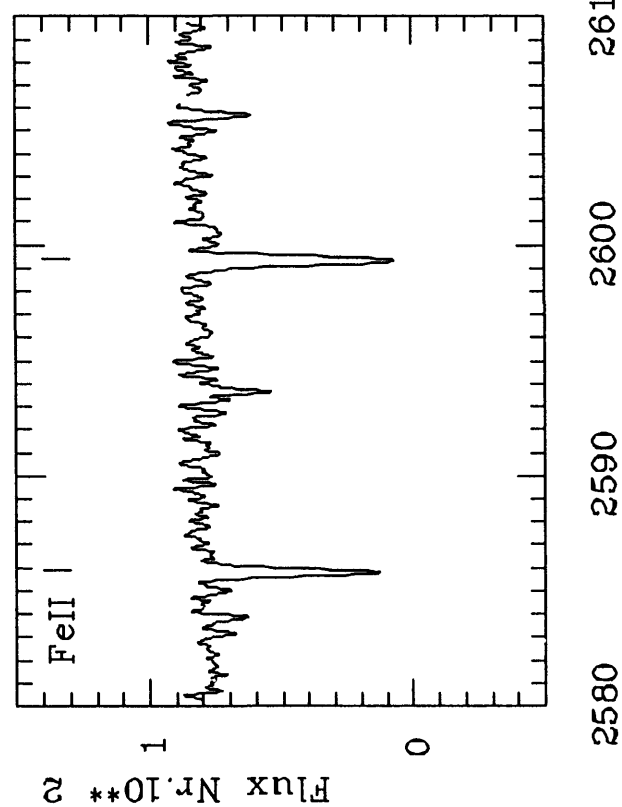
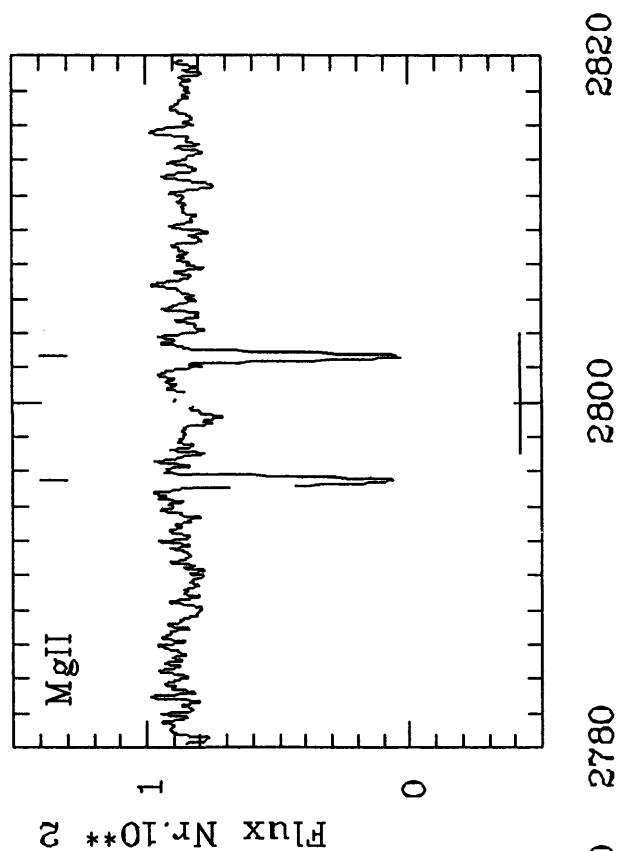
IUE 1 11044 L 87.06.20

OHP R GA8362

88.11.24

HD 183362 B3Ve

vsini 245



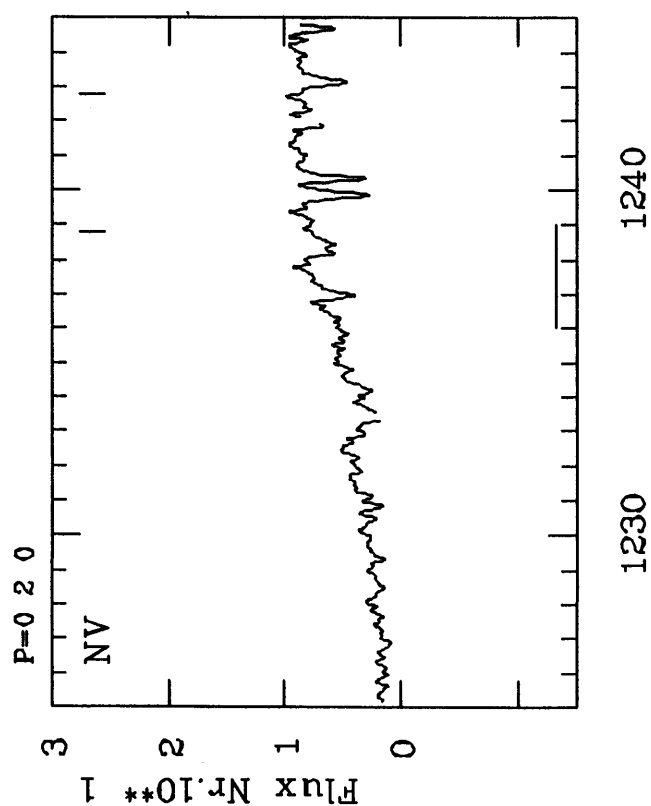
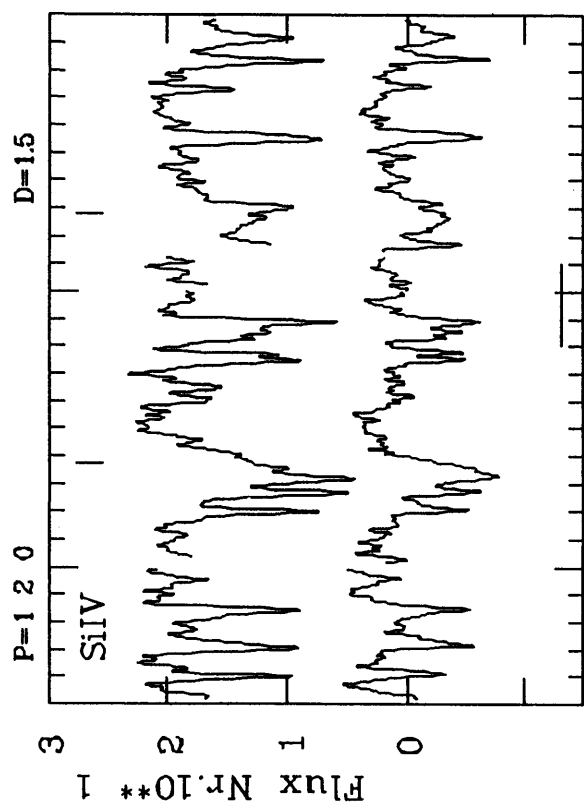
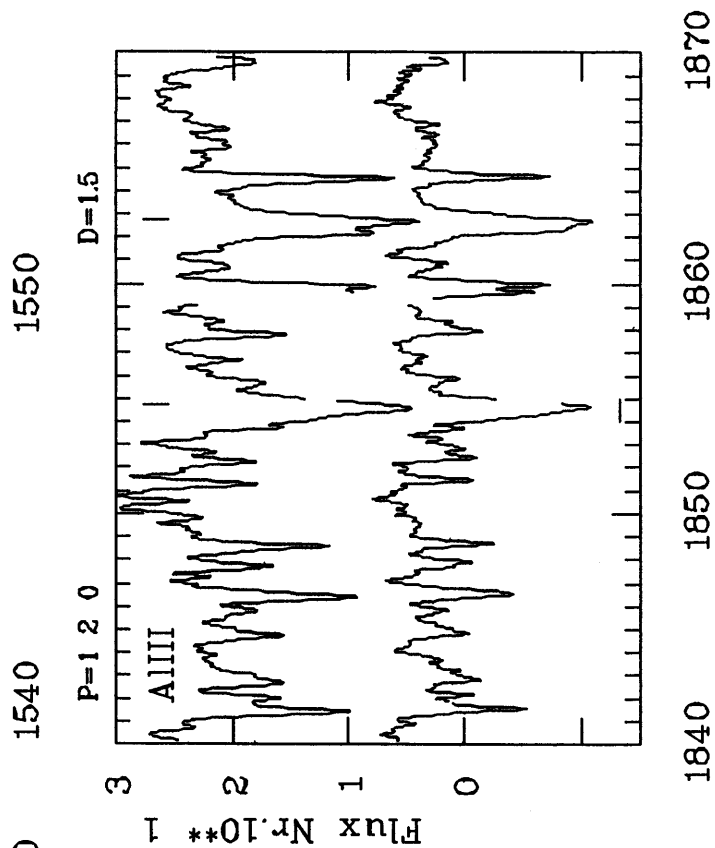
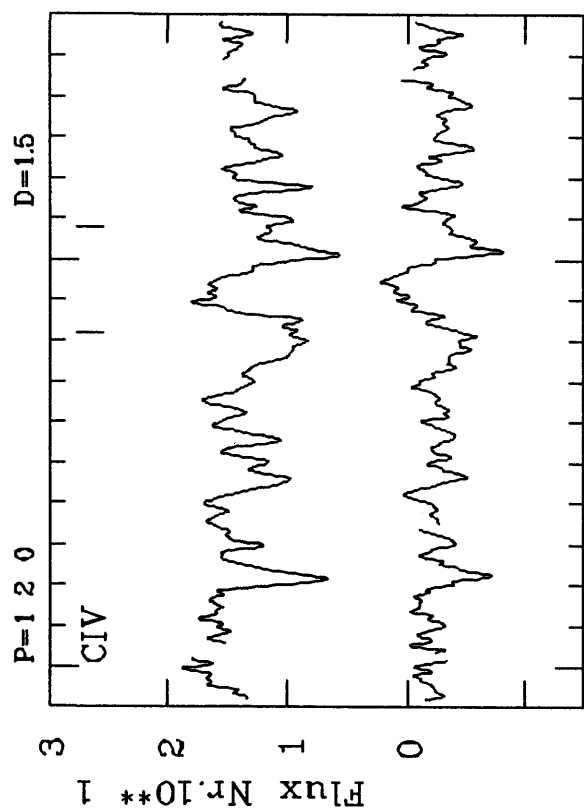
IUE 3 31218 L 87.06.20

IUE 1 11044 L 87.06.20

OHP R GA8362 88.11.24

HD 183656 B6esh

vsini 300



IUE 3 14478 L 81.07.15 - 3 21152 L 83.09.24

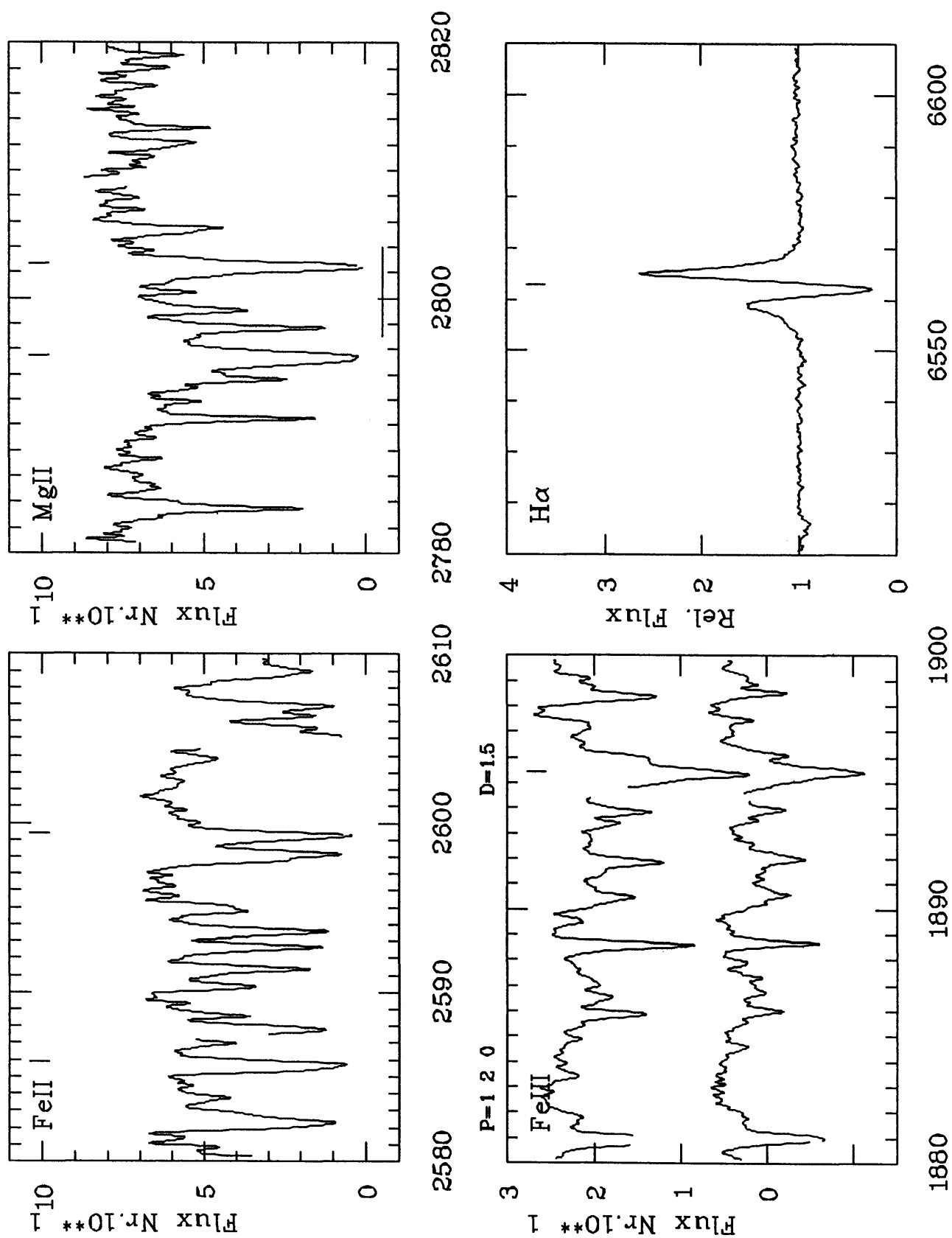
IUE 2 11064 L 81.07.15

OHP R GA8366

88.11.25

HD 183656 B6esh

vsini 300

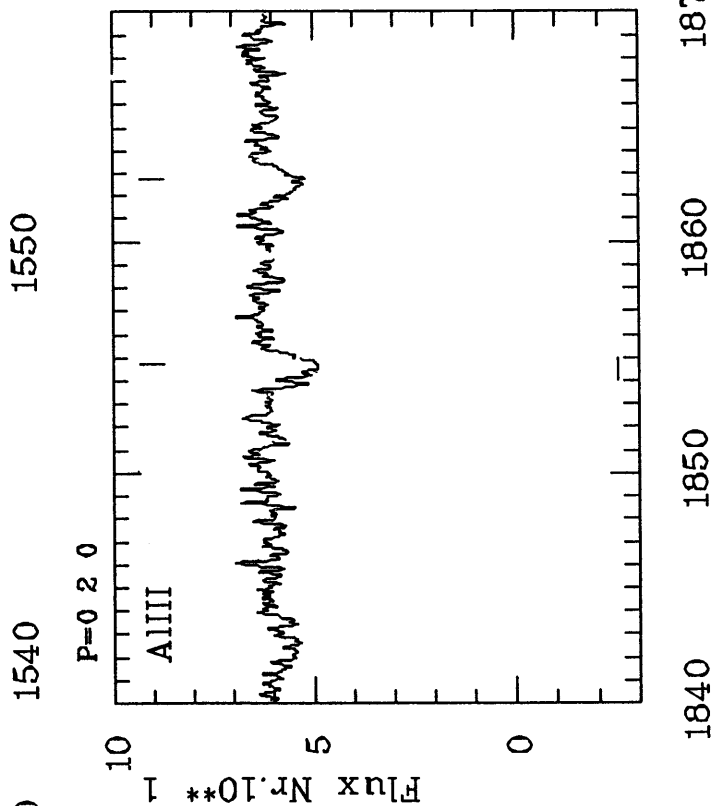
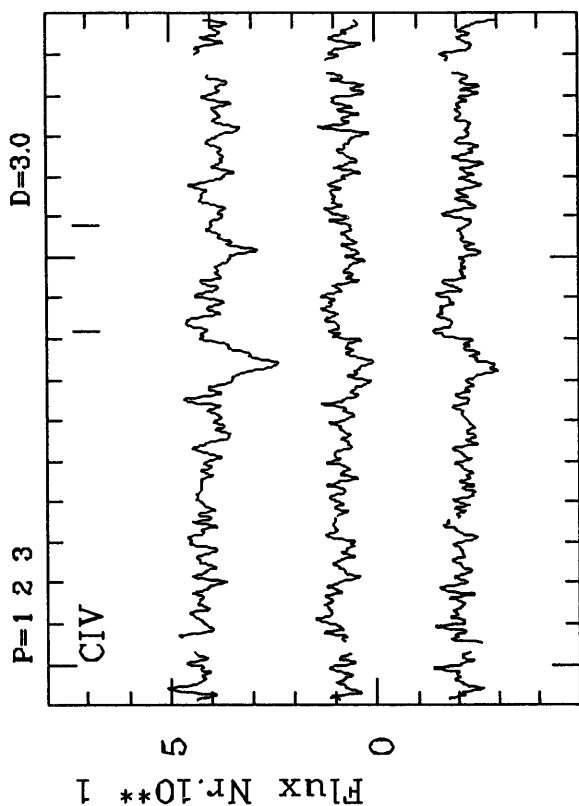


IVE 3 14478 L 81.07.15 - 3 21152 L 83.09.24
 IVE 2 11064 L 81.07.15

OHP R GA8366 88.11.25

HD 183914 B8Ve

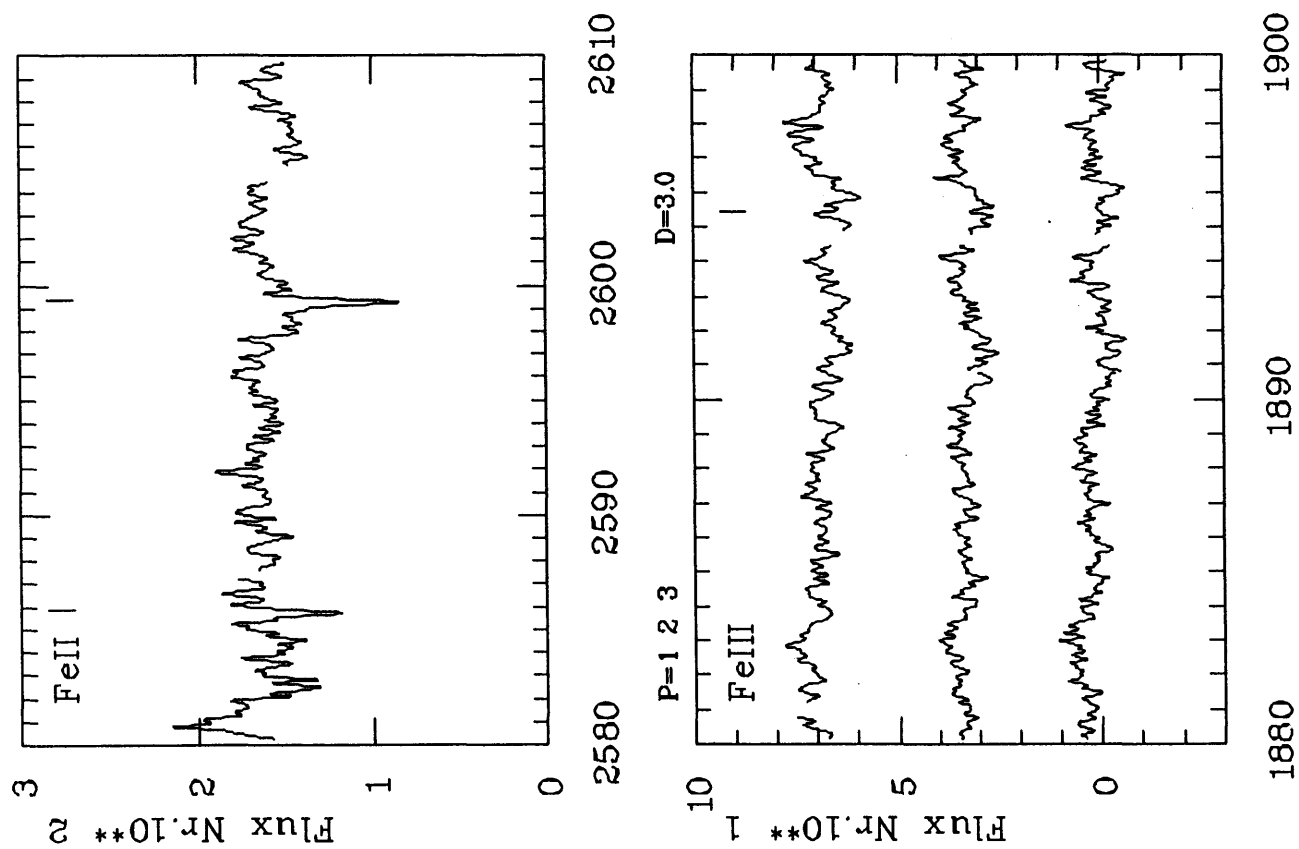
vsini 250



IUE 3 05369 L 79.05.26 - 3 26206 L 85.06.19 - 3 26386 L 85.07.10
 IUE 2 04609 L 79.05.26

HD 183914 B8Ve

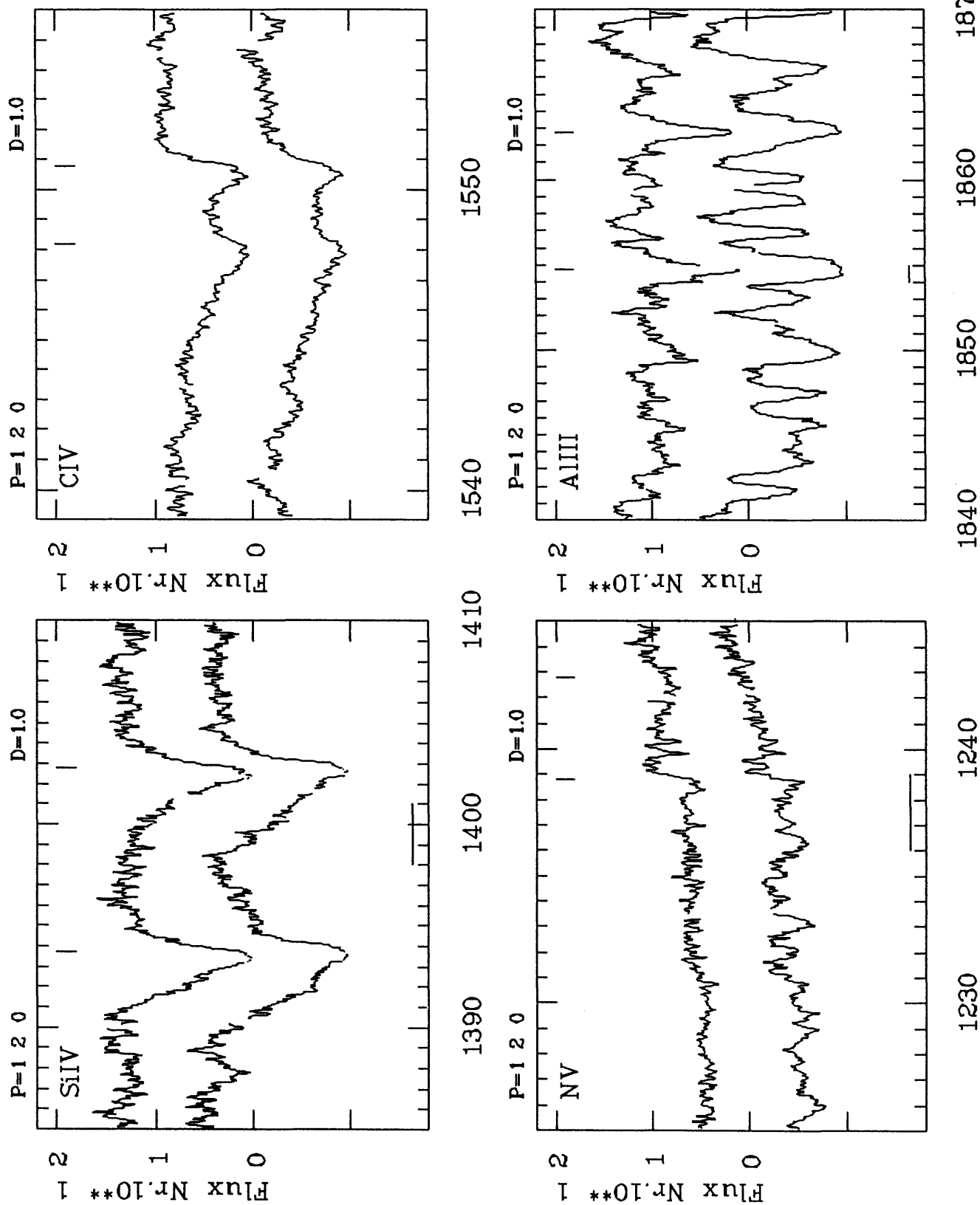
vsini 250



IUE 3 05369 L 79.05.26 - 3 26206 L 85.06.19 - 3 26386 L 85.07.10
 IUE 2 04609 L 79.05.26

HD 184279 B0.5IVe

vsini 230



IUE 3 21153 L 83.09.24 - 3 30813 L 87.04.20

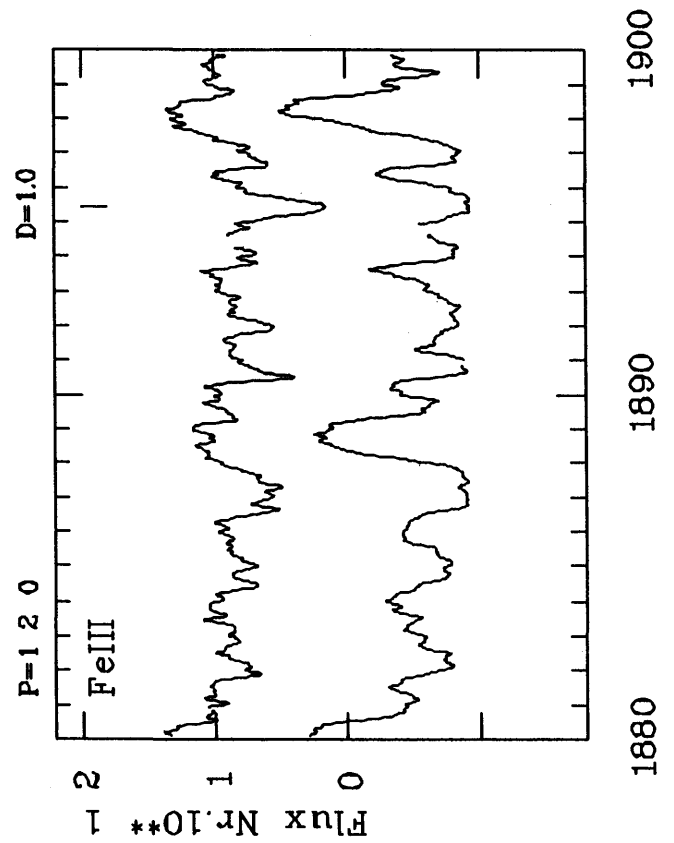
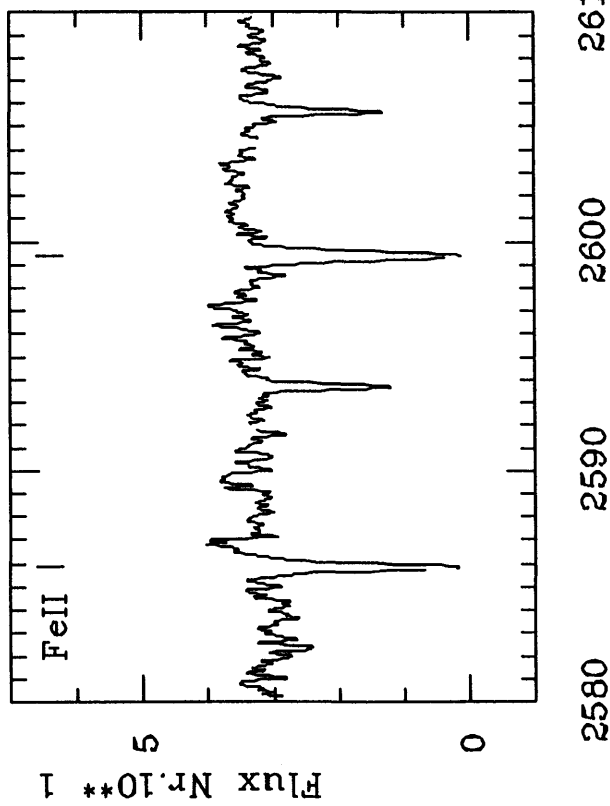
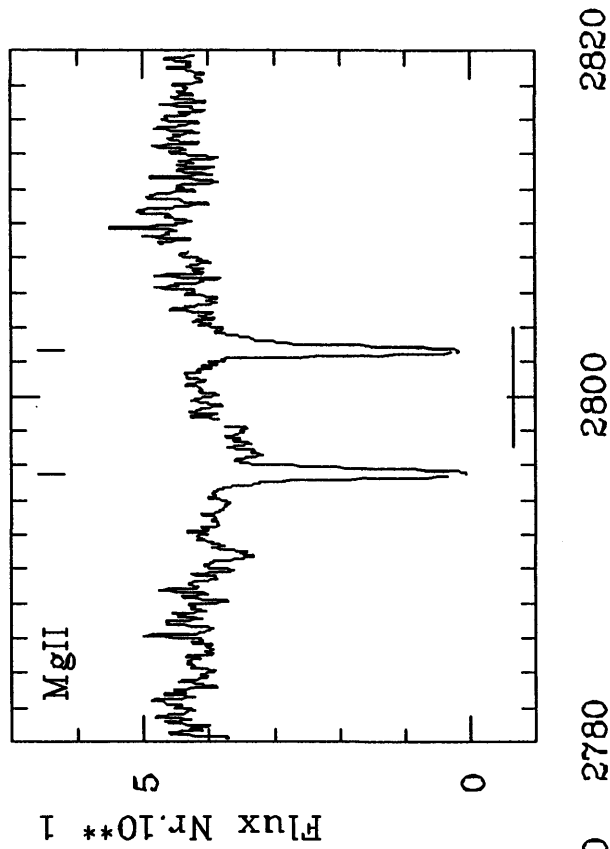
IUE 2 16866 L 83.09.24

OHP B GB8986 85.08.29

OHP R GA6042 84.11.01

HD 184279 B0.5IVe

vsini 230



IUE 3 21153 L 83.09.24 - 3 30813 L 87.04.20

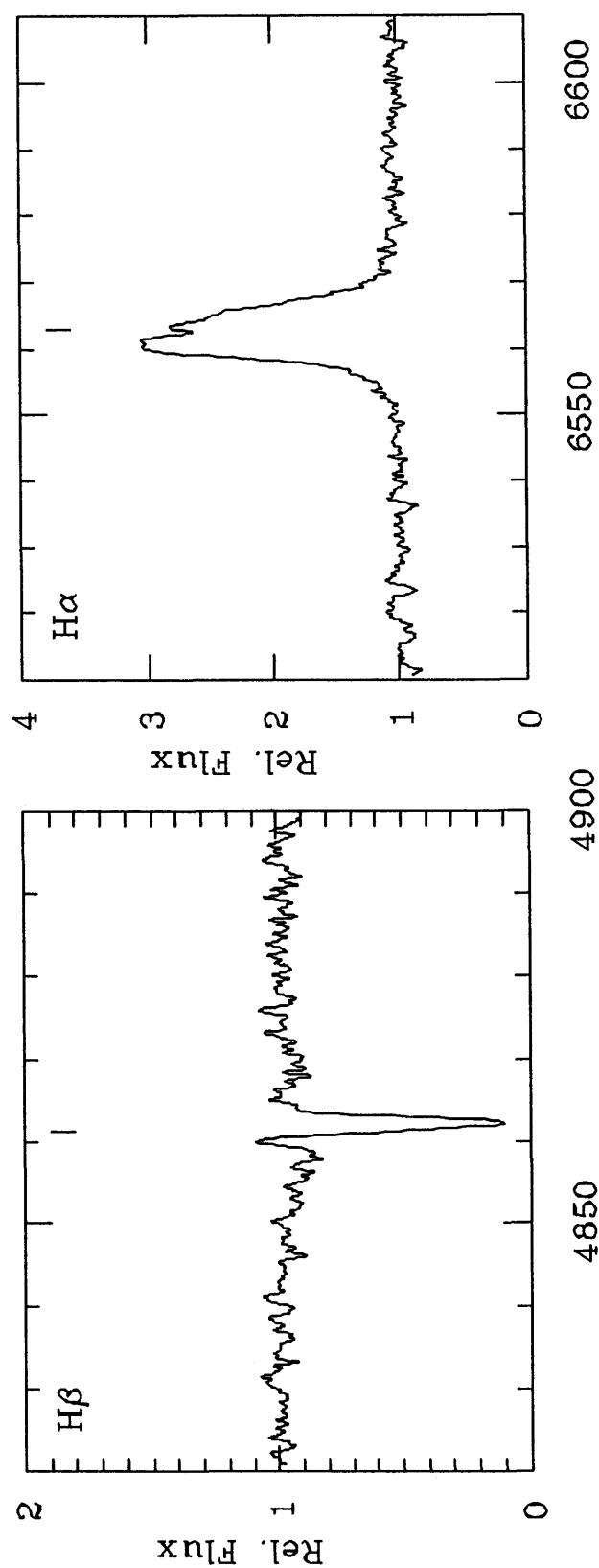
IUE 2 16866 L 83.09.24

OHP B GB8986 85.08.29

OHP R GA6042 84.11.01

HD 184279 B0.5IVe

vsini 230



IUE 3 21153 L 83.09.24 - 3 30813 L 87.04.20

IUE 2 16866 L 83.09.24

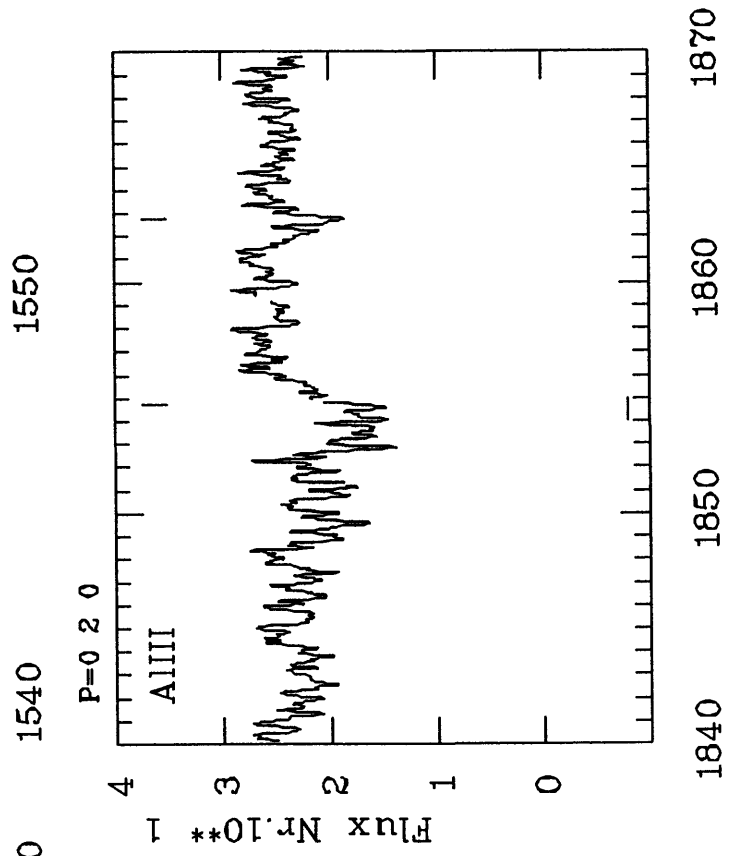
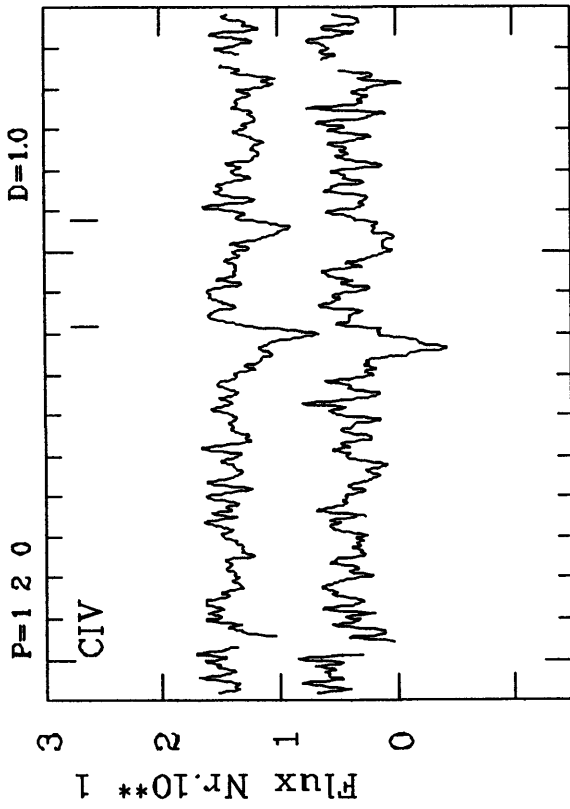
OHP B GB8986 85.08.29

OHP R GA6042 84.11.01



HD 185037 B8Ve

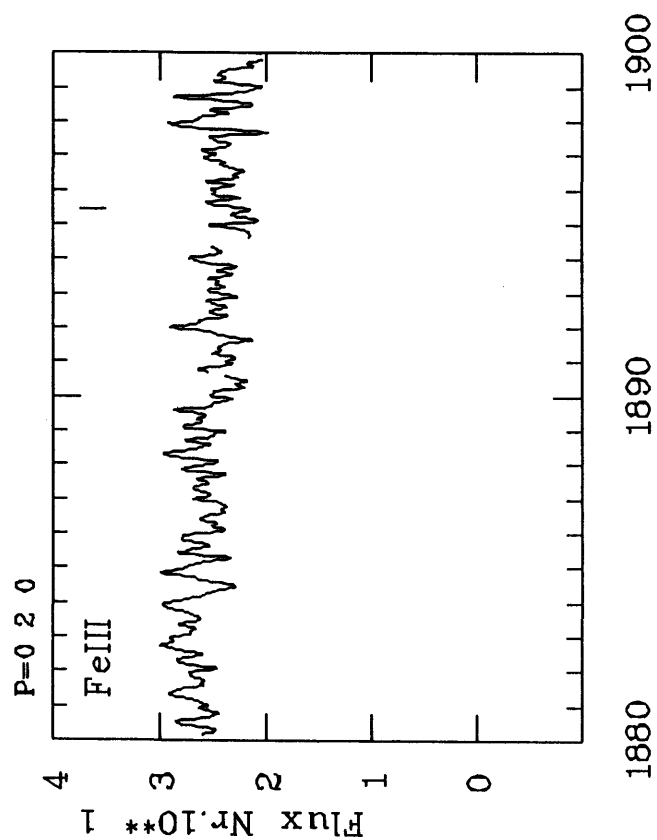
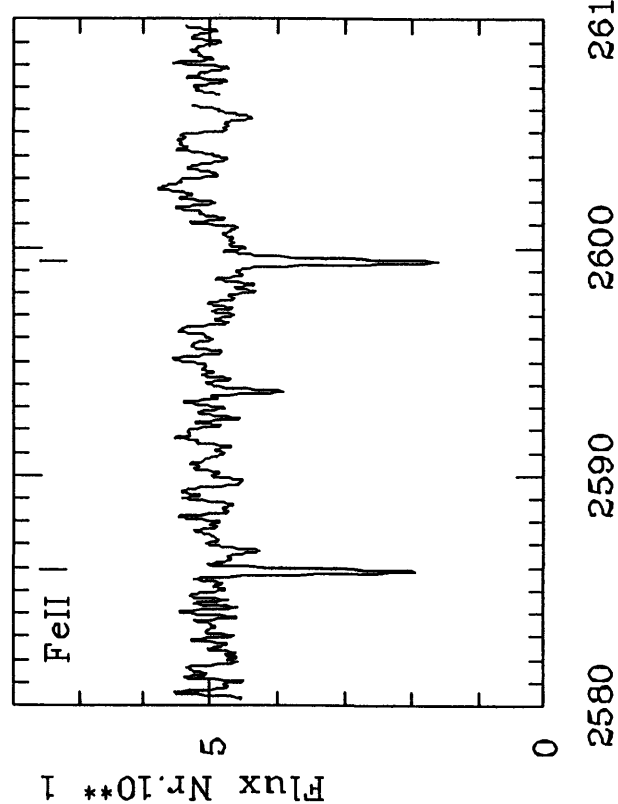
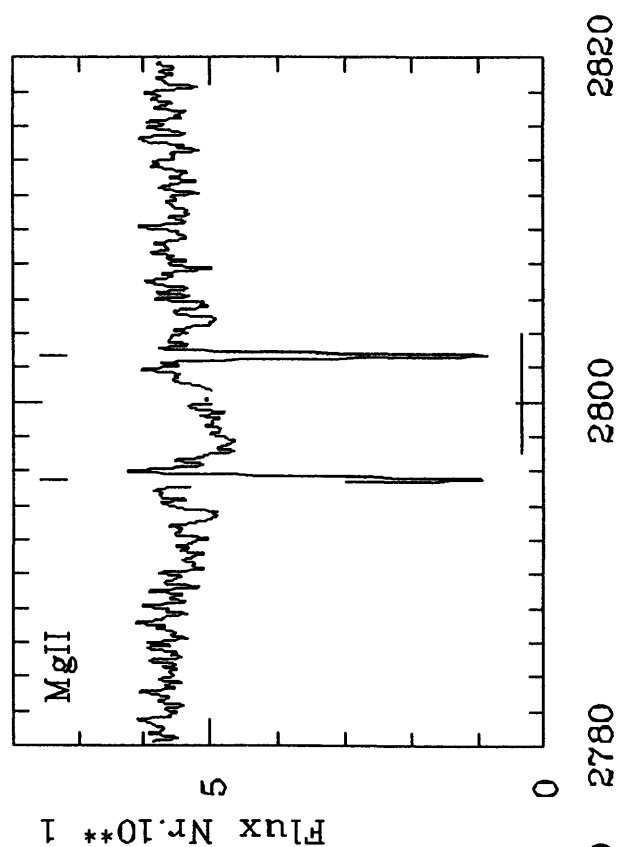
vsini 300



IUE 3 22667 L 84.04.04 - 3 26897 L 85.10.08
 IUE 1 08136 L 86.05.02

HD 185037 B8Ve

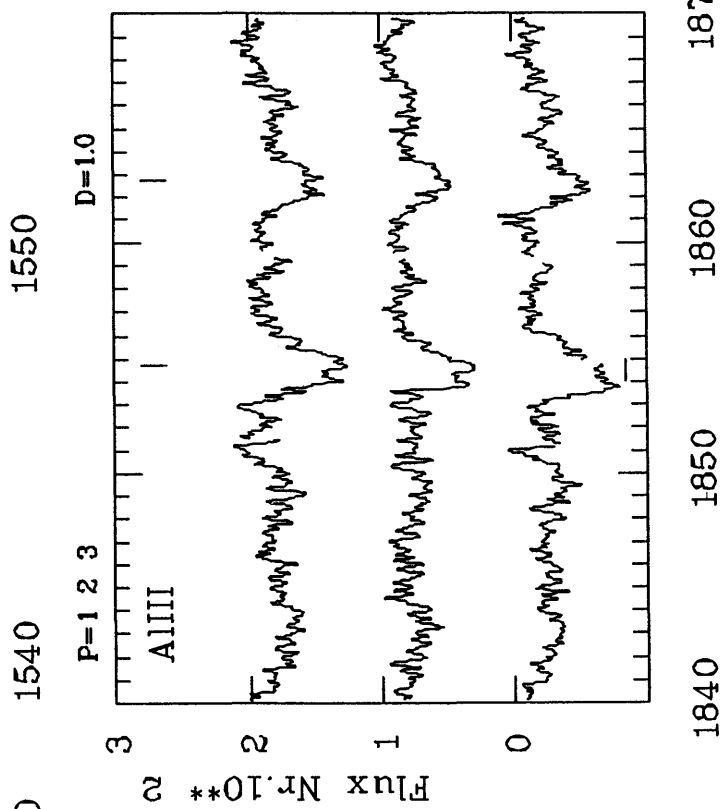
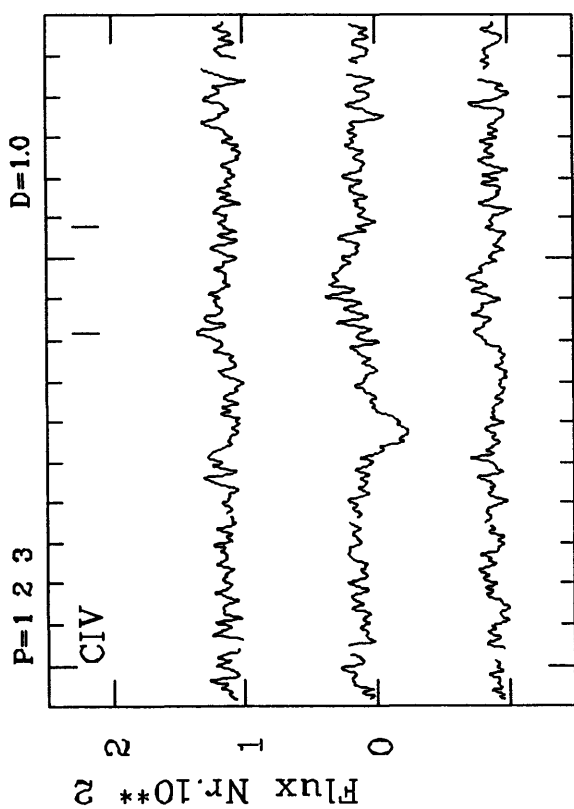
vsini 300



IUE 3 22667 L 84.04.04 - 3 26897 L 85.10.08
 IUE 1 08136 L 86.05.02

HD 187811 B3Ve

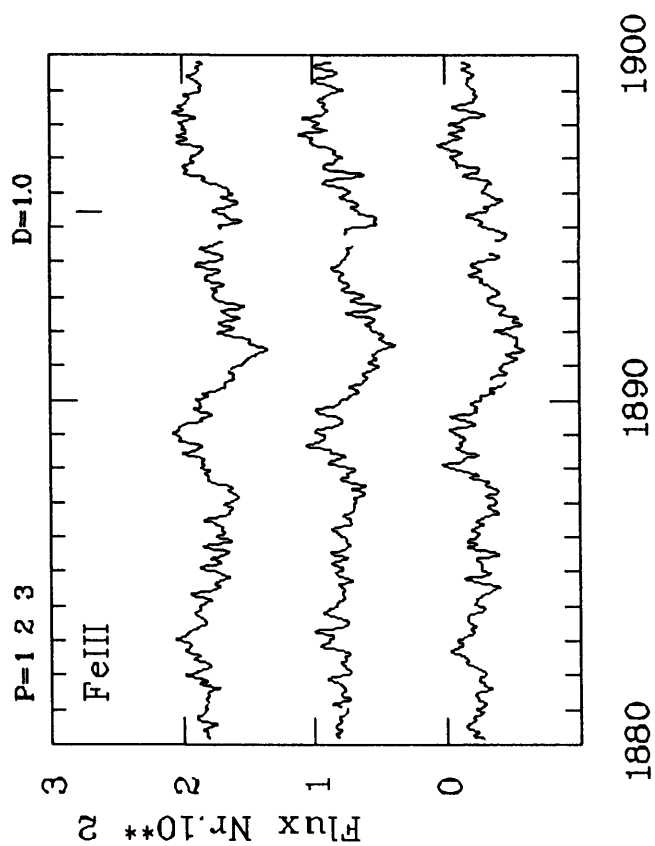
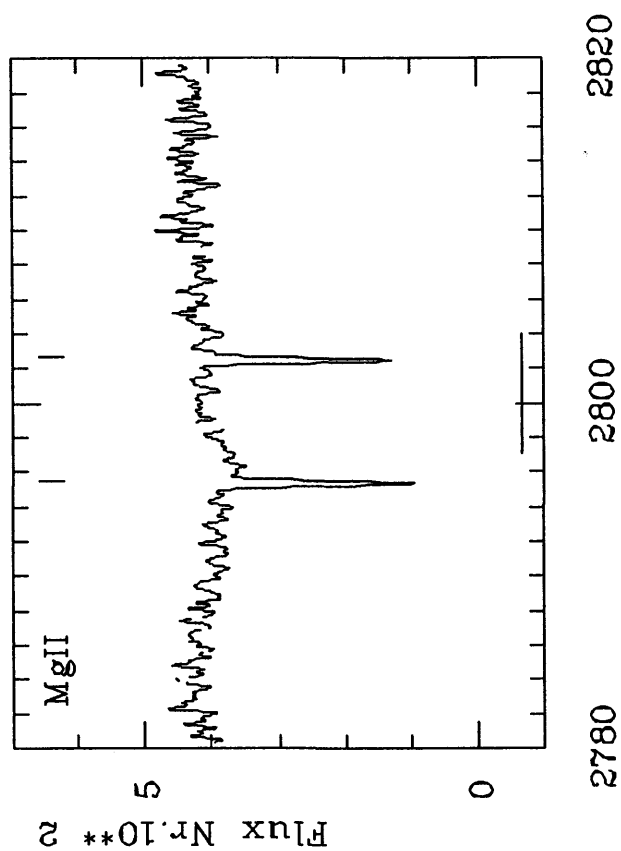
vsini 230



IUE 3 19937 L 83.05.08 - 3 20432 L 83.07.10 - 3 21488 L 83.11.09
 IUE 2 16758 L 83.09.09

HD 187811 B3Ve

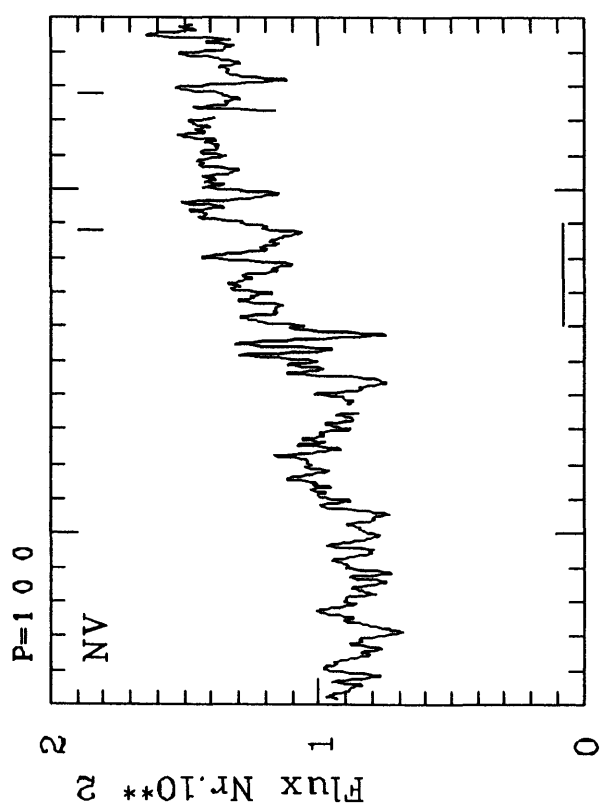
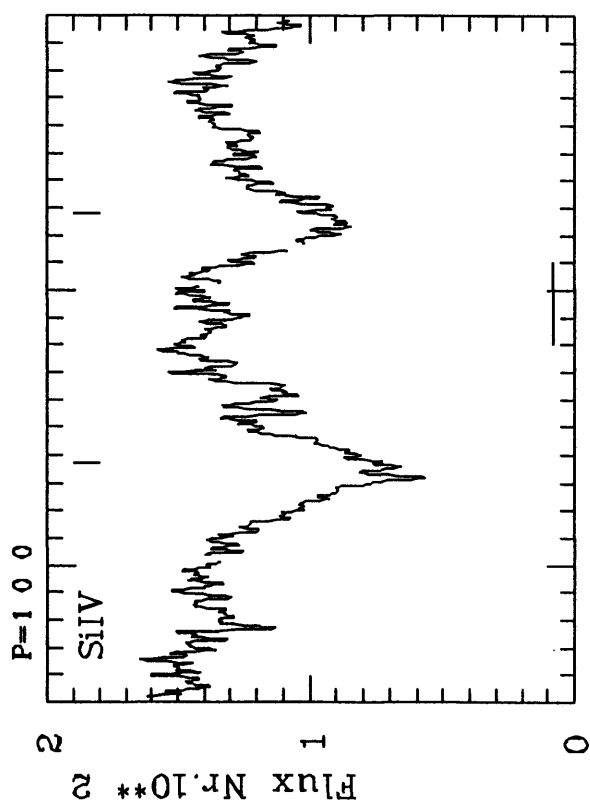
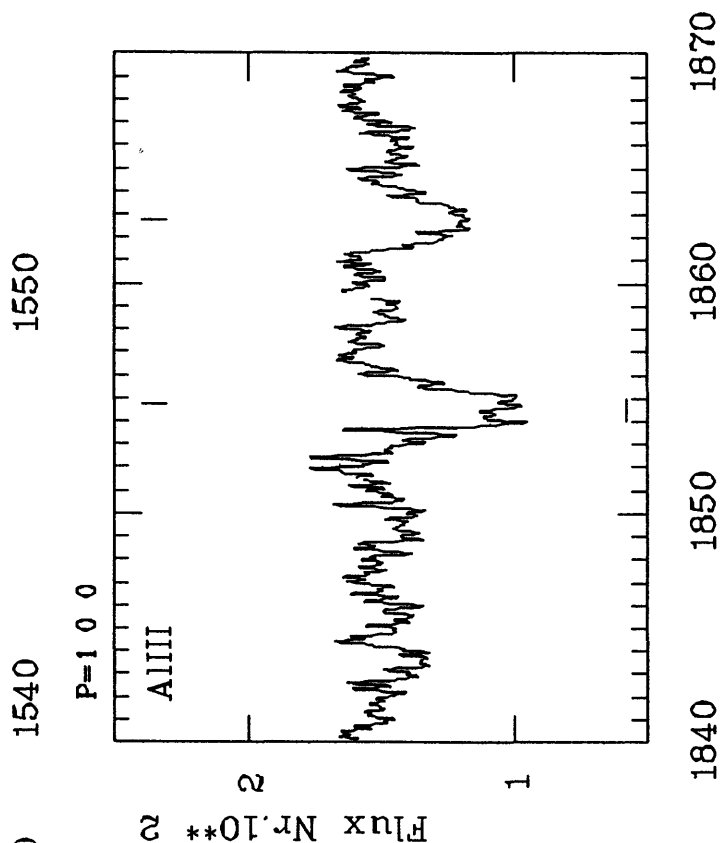
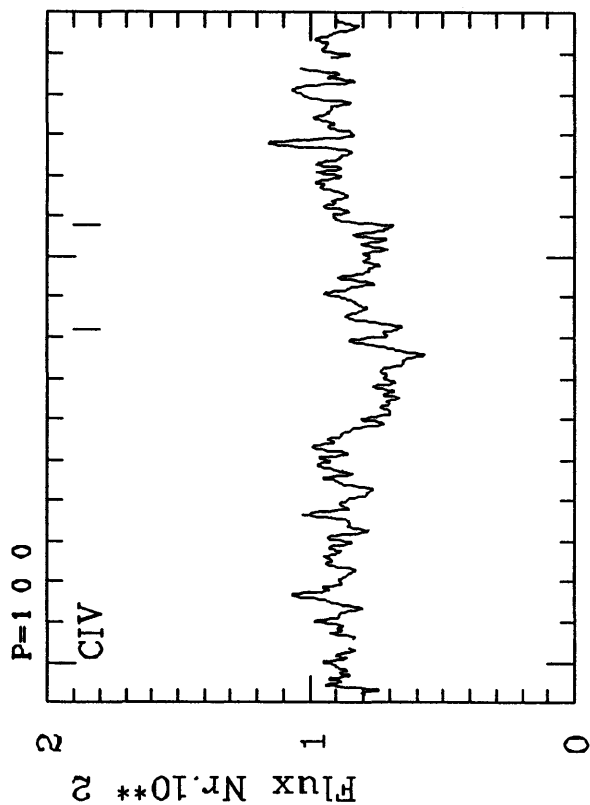
vsini 230



IUE 3 19937 L 83.05.08 - 3 20432 L 83.07.10 - 3 21488 L 83.11.09
 IUE 2 16758 L 83.09.09

HD 189687 B2.5Ve

vsini 200

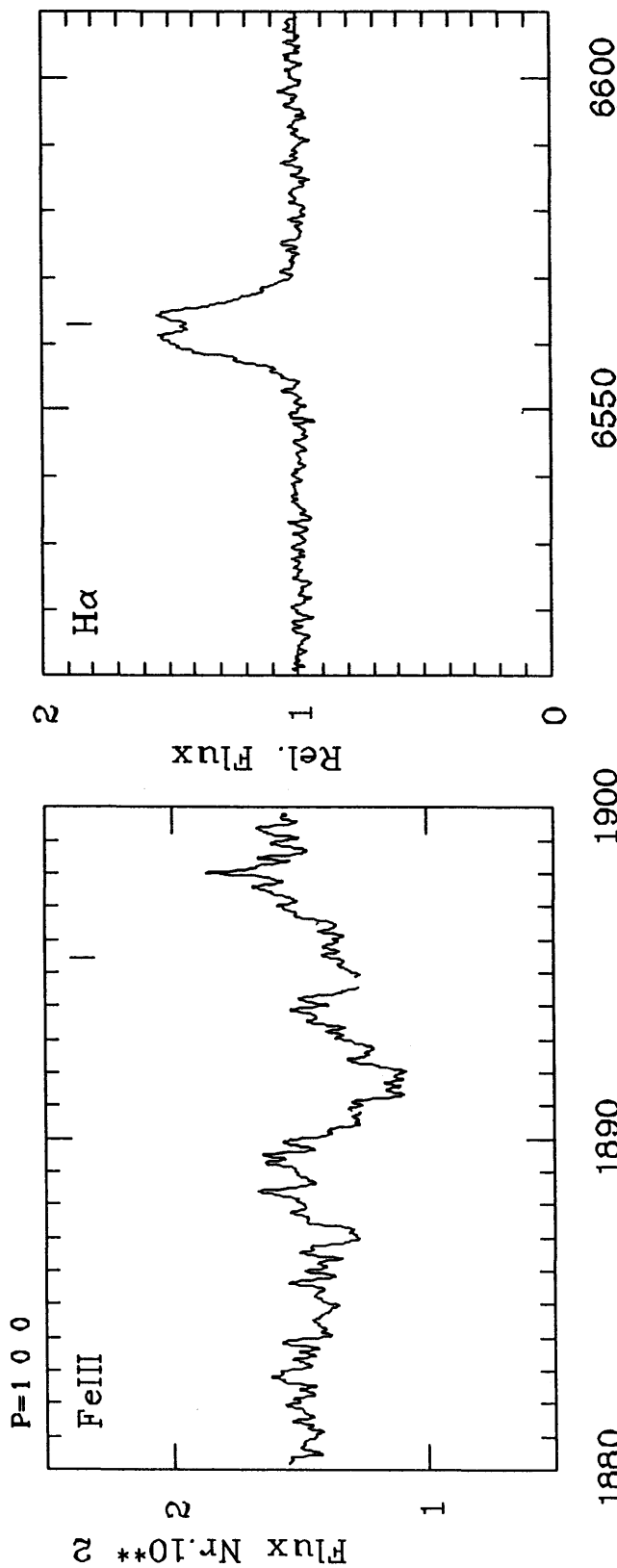


IUE 3 19936 L 83.05.08

OHP R GA8356 88.11.23

HD 189687 B2.5Ve

vsini 200



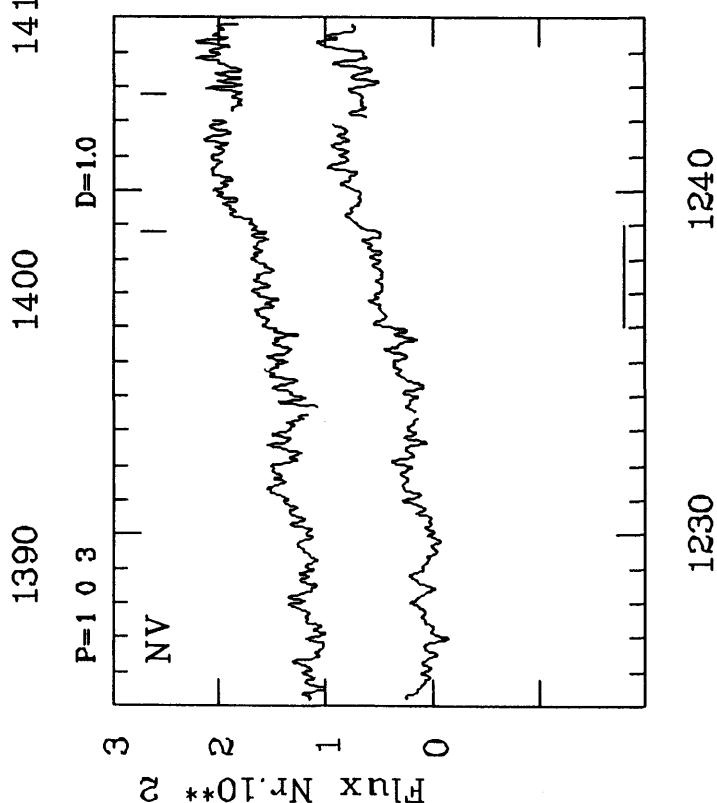
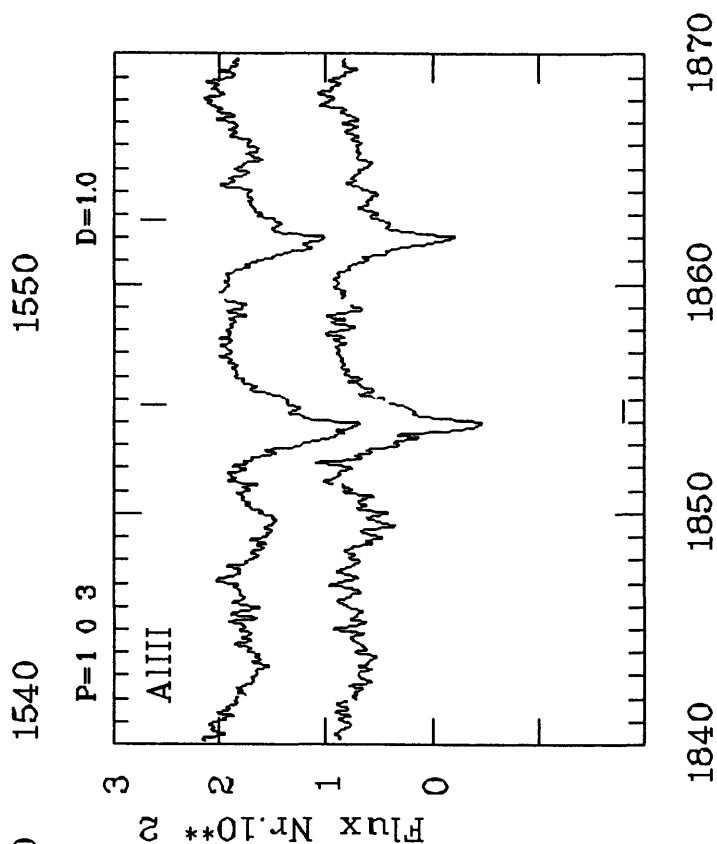
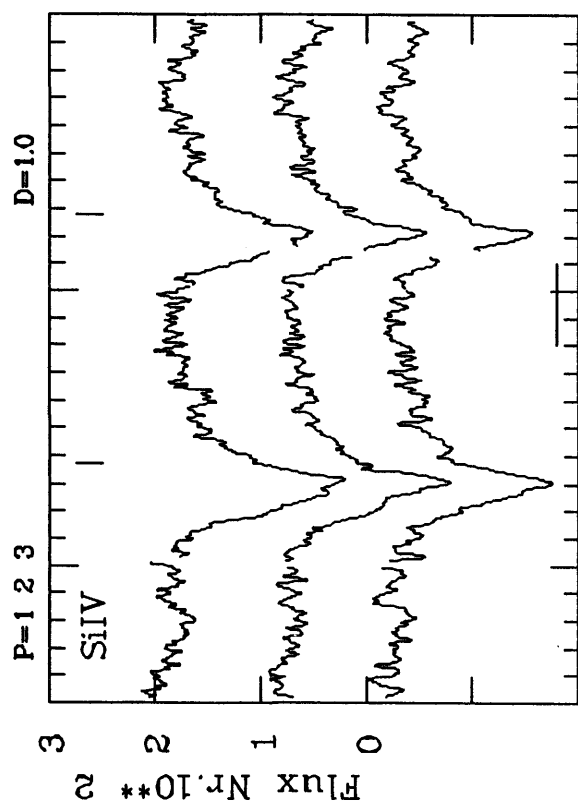
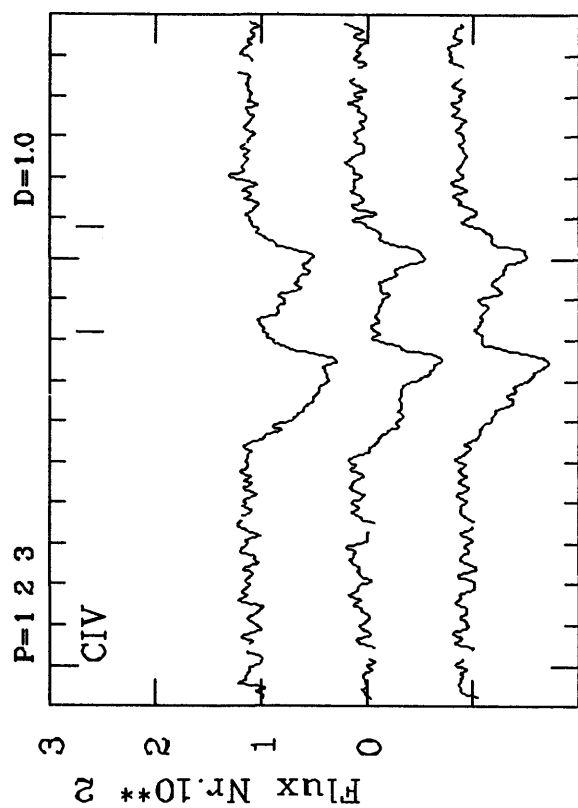
IVE 3 19936 L 83.05.08

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OHP R GA8356 88.11.23

HD 191610 B3IVe

vsini 320

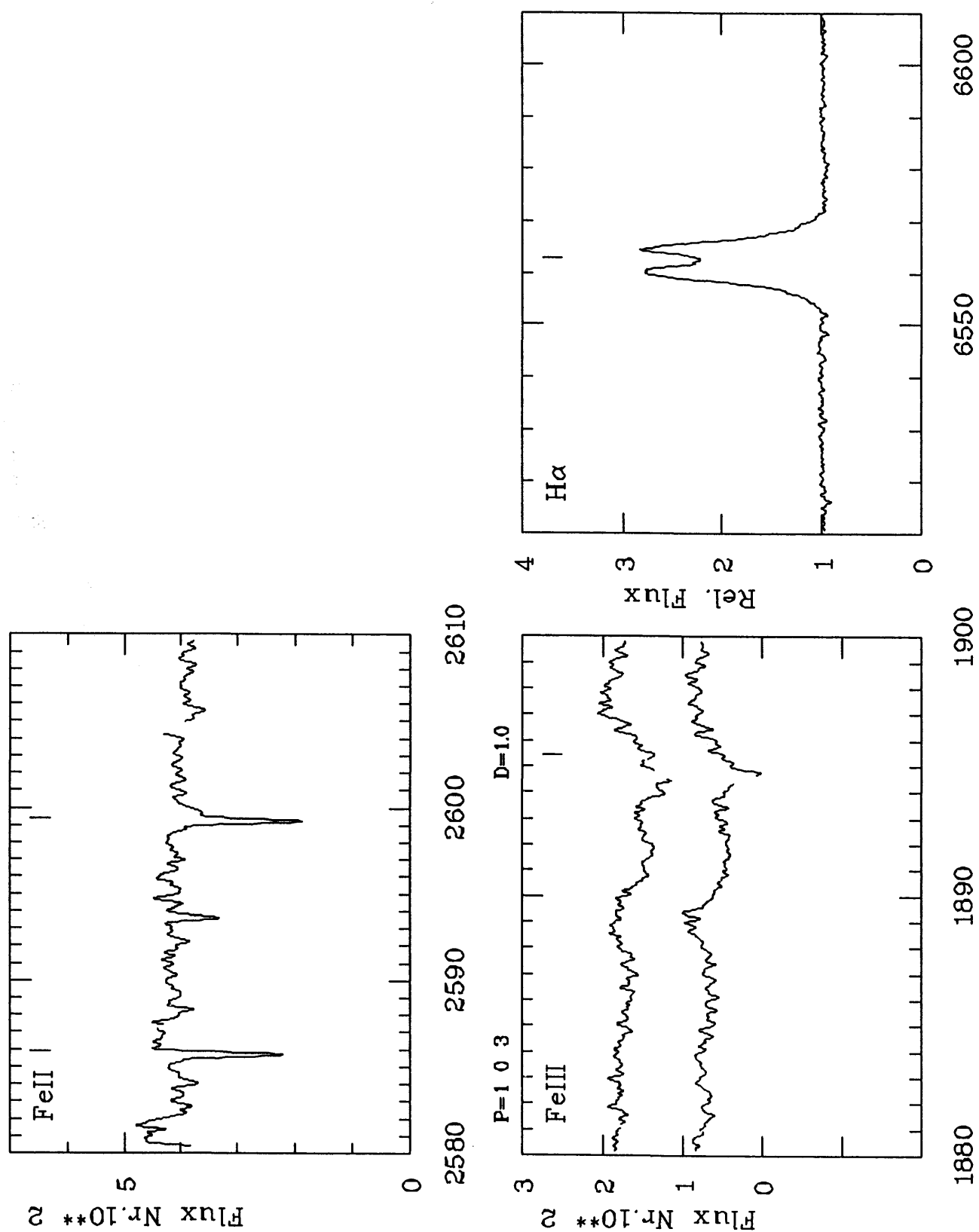


IUE 3 26301 L 85.06.28 - 3 26778 L 85.09.29 - 3 26808 L 85.09.30
 IUE 2 07342 L 80.03.30

OHP R GA8377 88.11.27

HD 191610 B3IVe

vsini 320

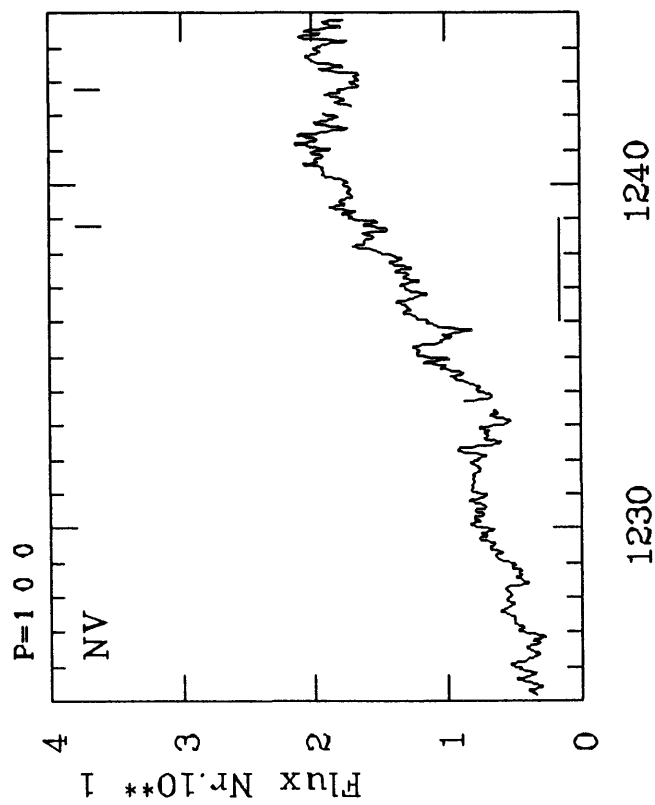
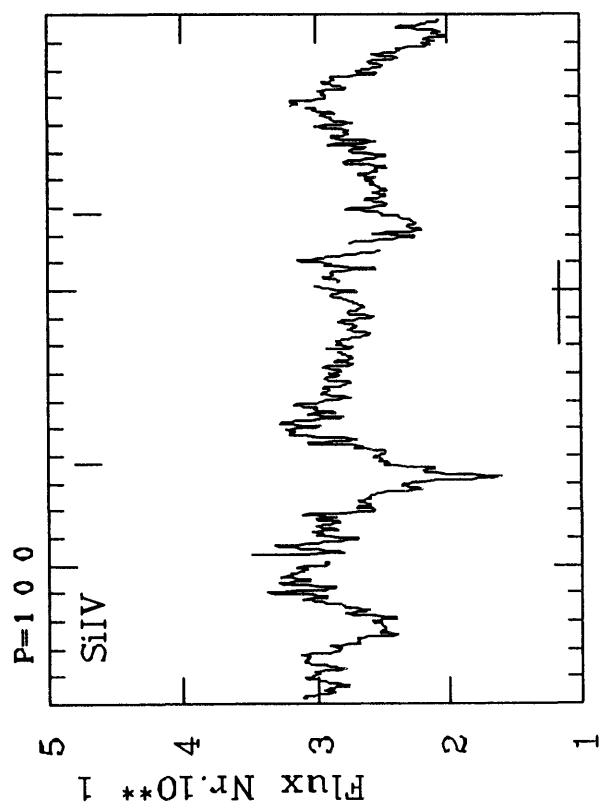
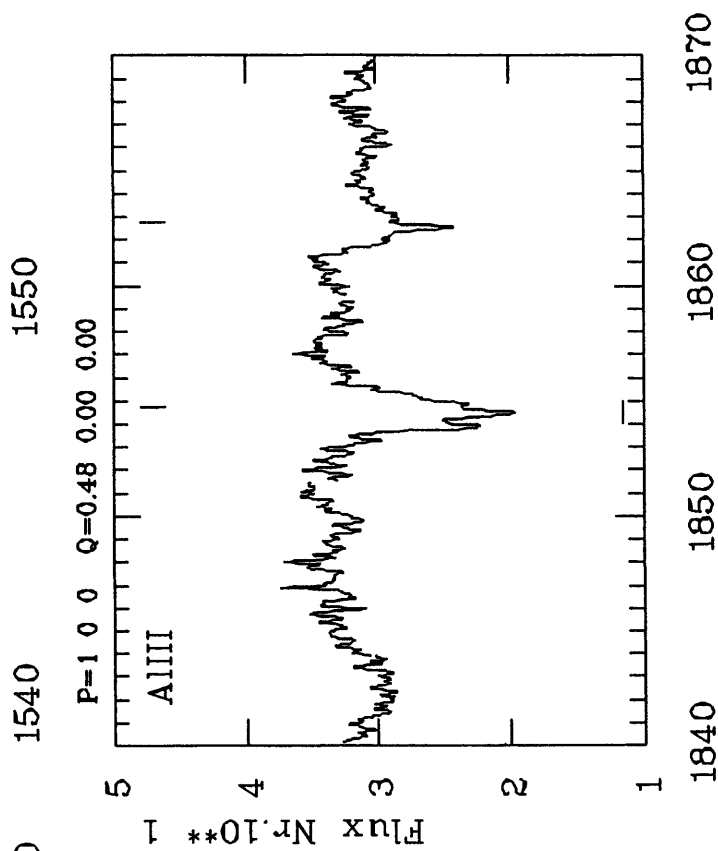
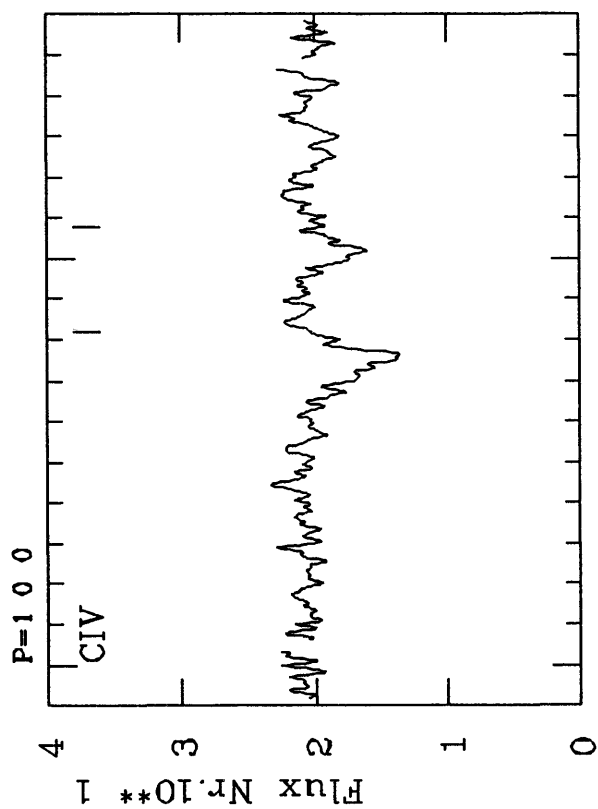


IUE 3 26301 L 85.06.28 - 3 26778 L 85.09.29 - 3 26808 L 85.09.30
 IUE 2 07342 L 80.03.30

OHP R GA8377 88.11.27

HD 192044 B7IVe

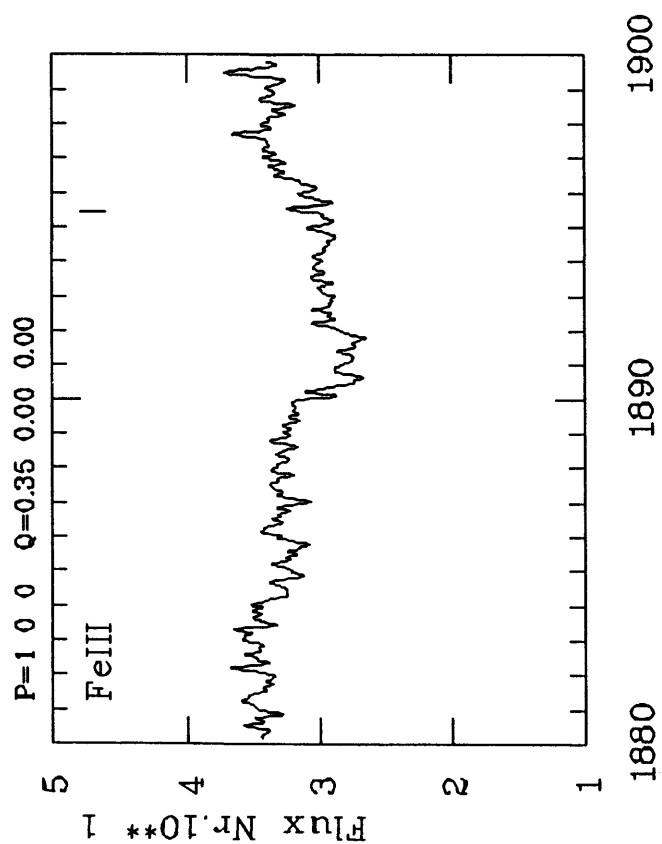
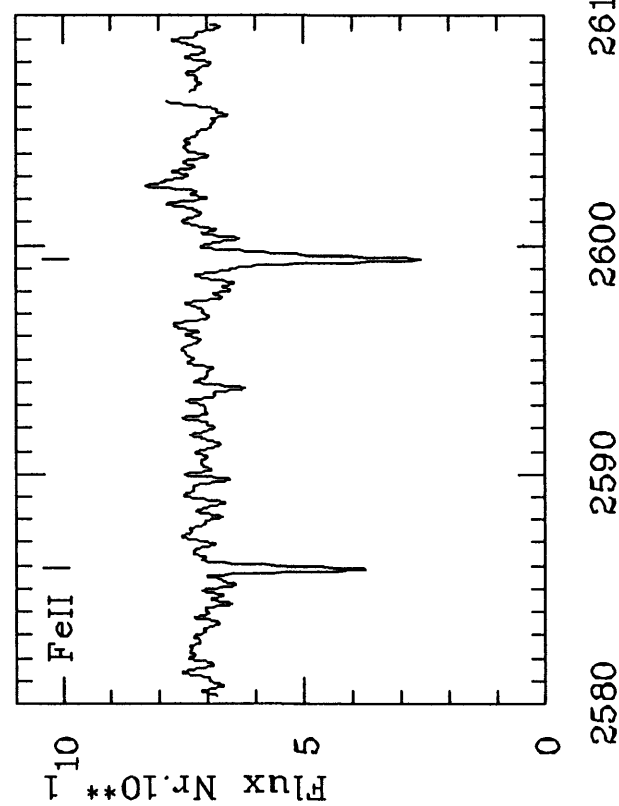
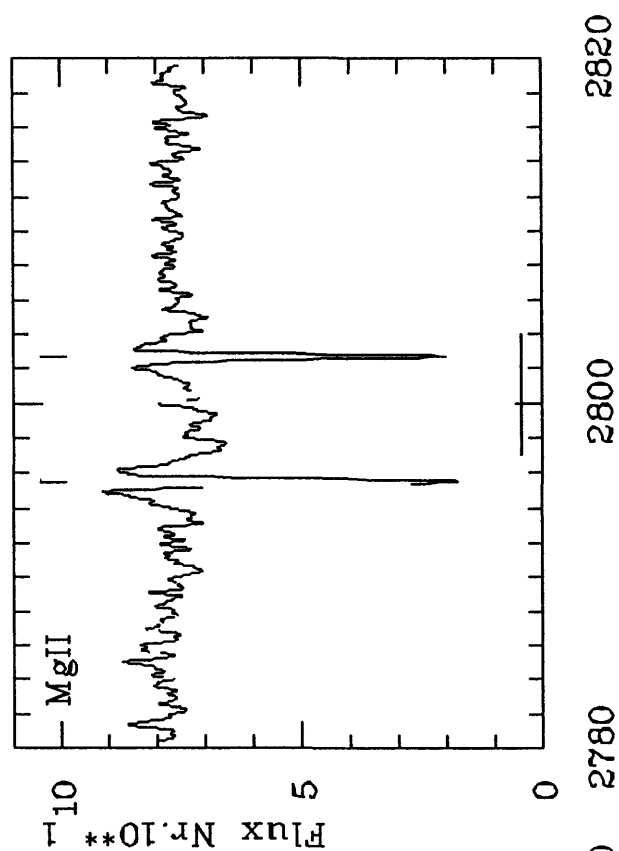
vsini 280



IUE 3 28251 L 86.05.02
 IUE 1 08135 L 86.05.02

HD 192044 B7IVe

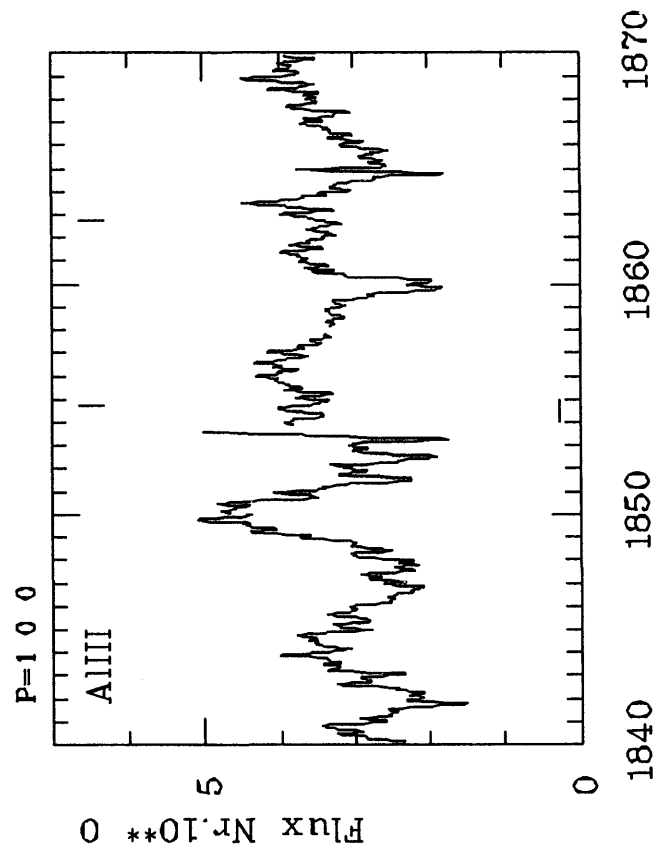
vsini 280



IUE 3 28251 L 86.05.02
 IUE 1 08135 L 86.05.02

HD 192518 A5IVsh

vsini 200



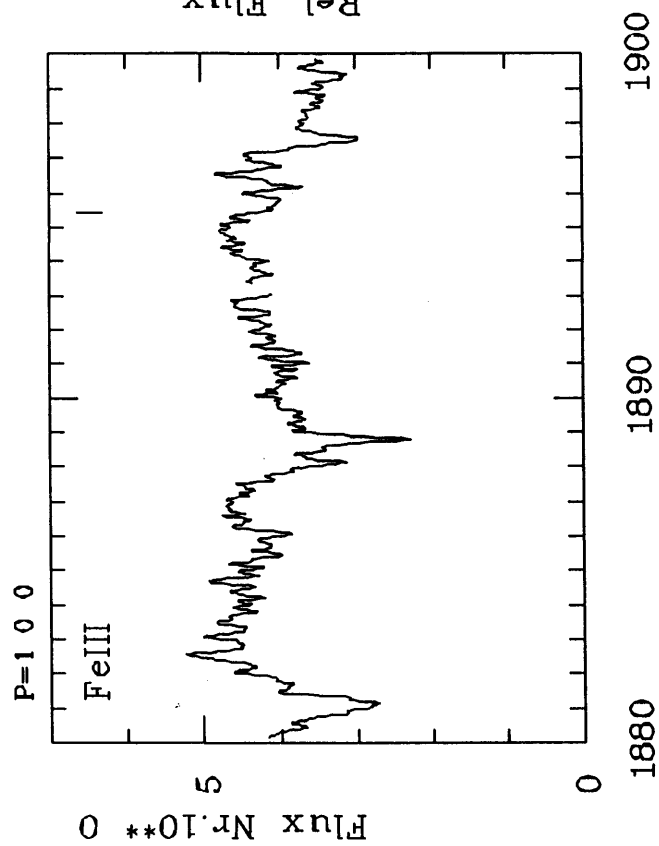
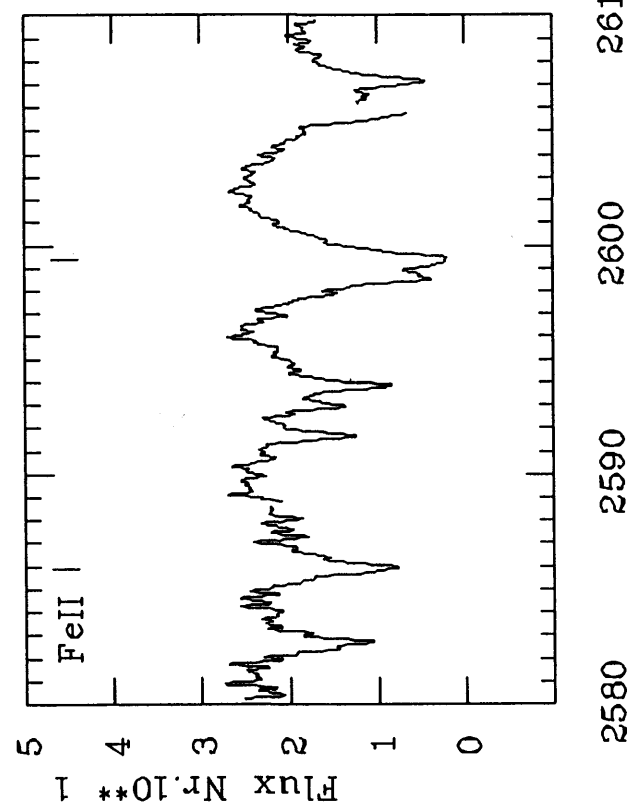
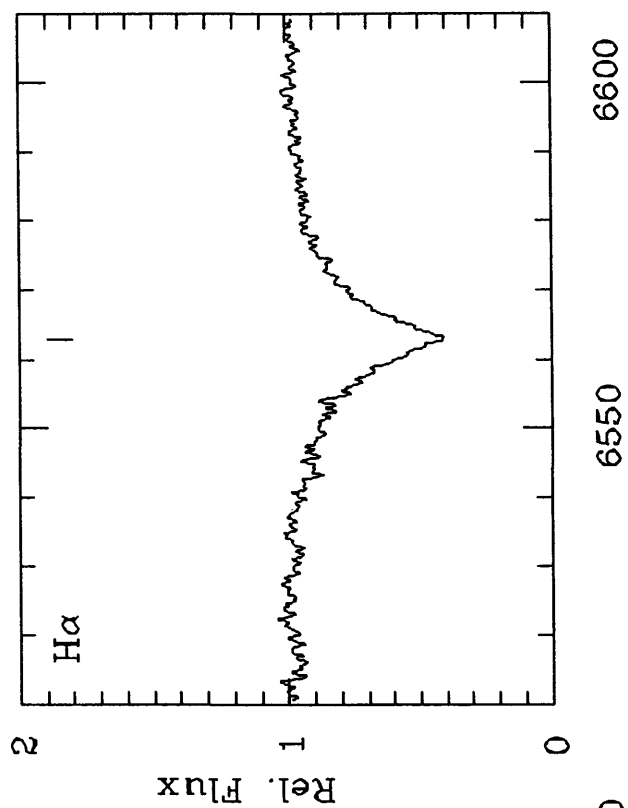
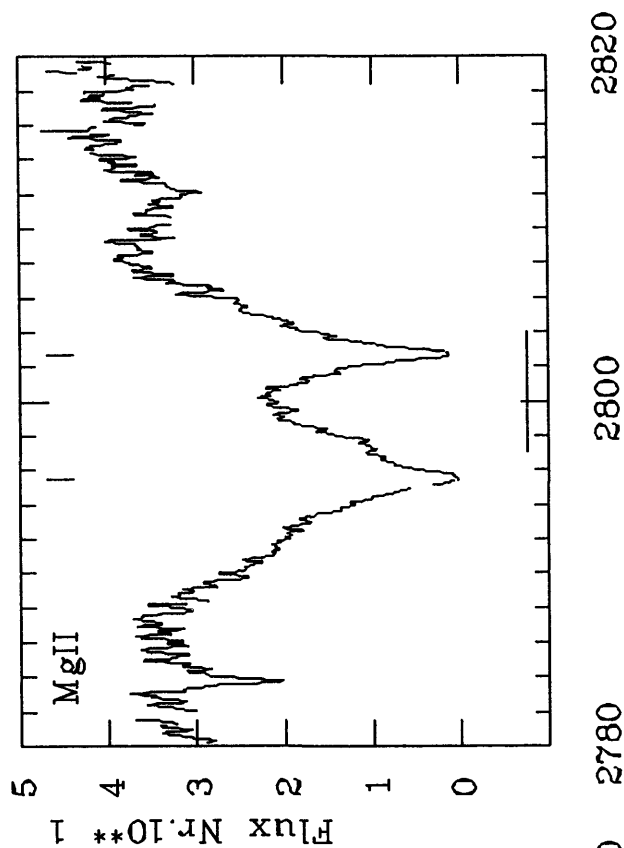
IVE 3 15511 S 81.11.18
 IVE 2 11988 S 81.11.18

-

OHP R GA8369 88.11.26

HD 192518 A5IVsh

vsini 200



IUE 3 15511 S 81.11.18

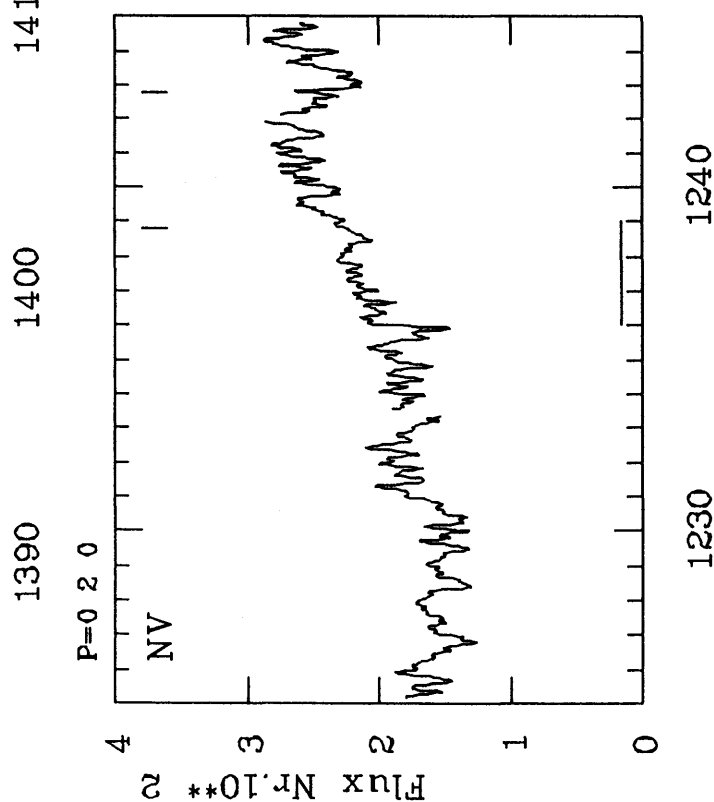
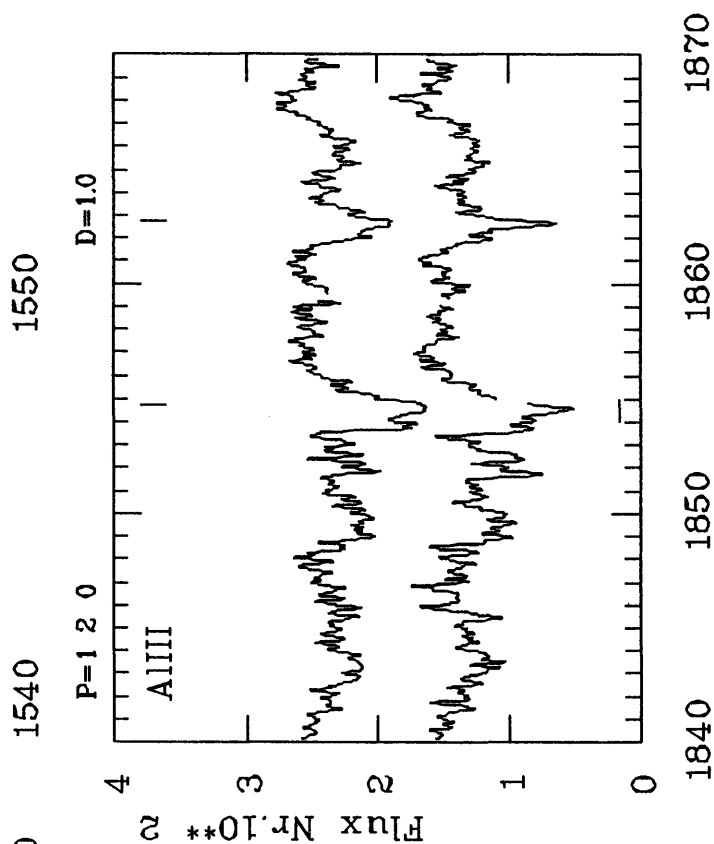
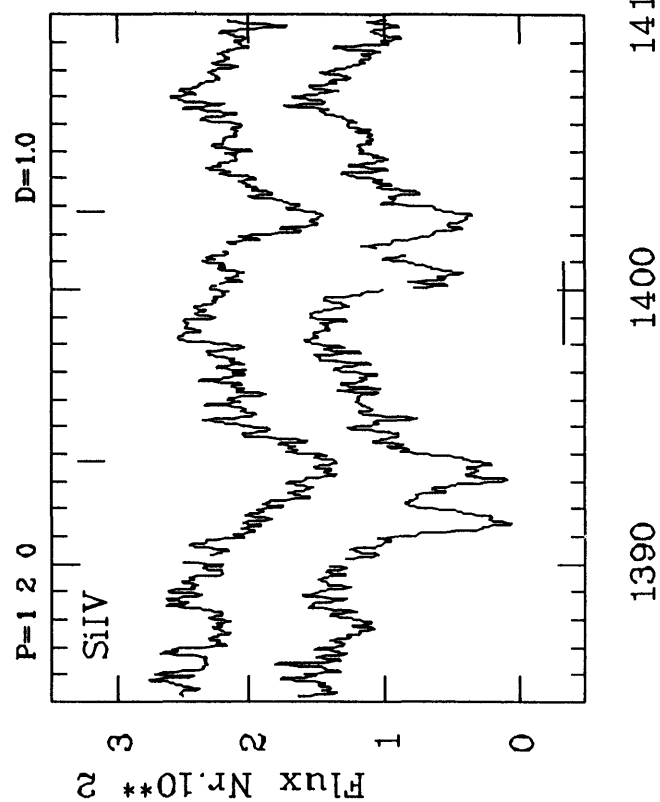
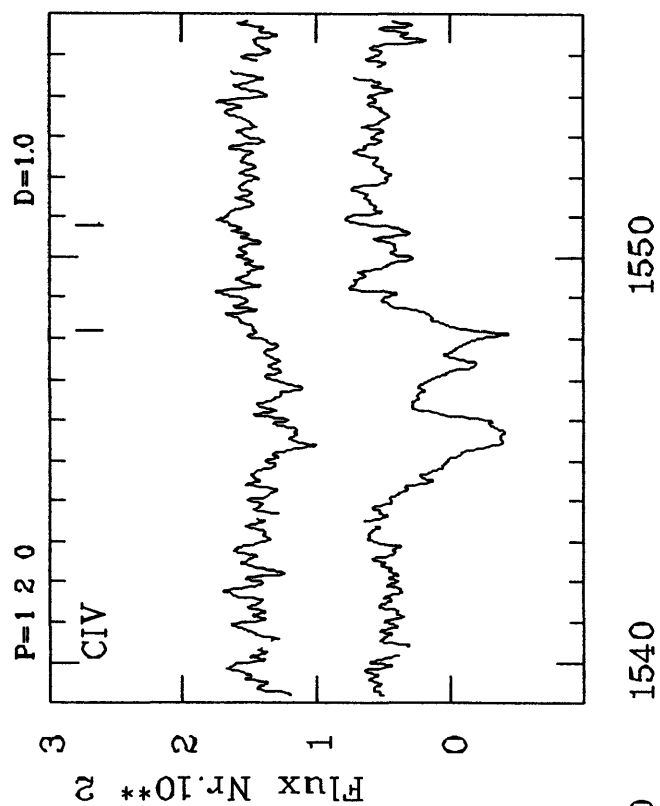
IUE 2 11988 S 81.11.18

OHP R GA8369

88.11.26

HD 192685 B3Ve

vsini 250

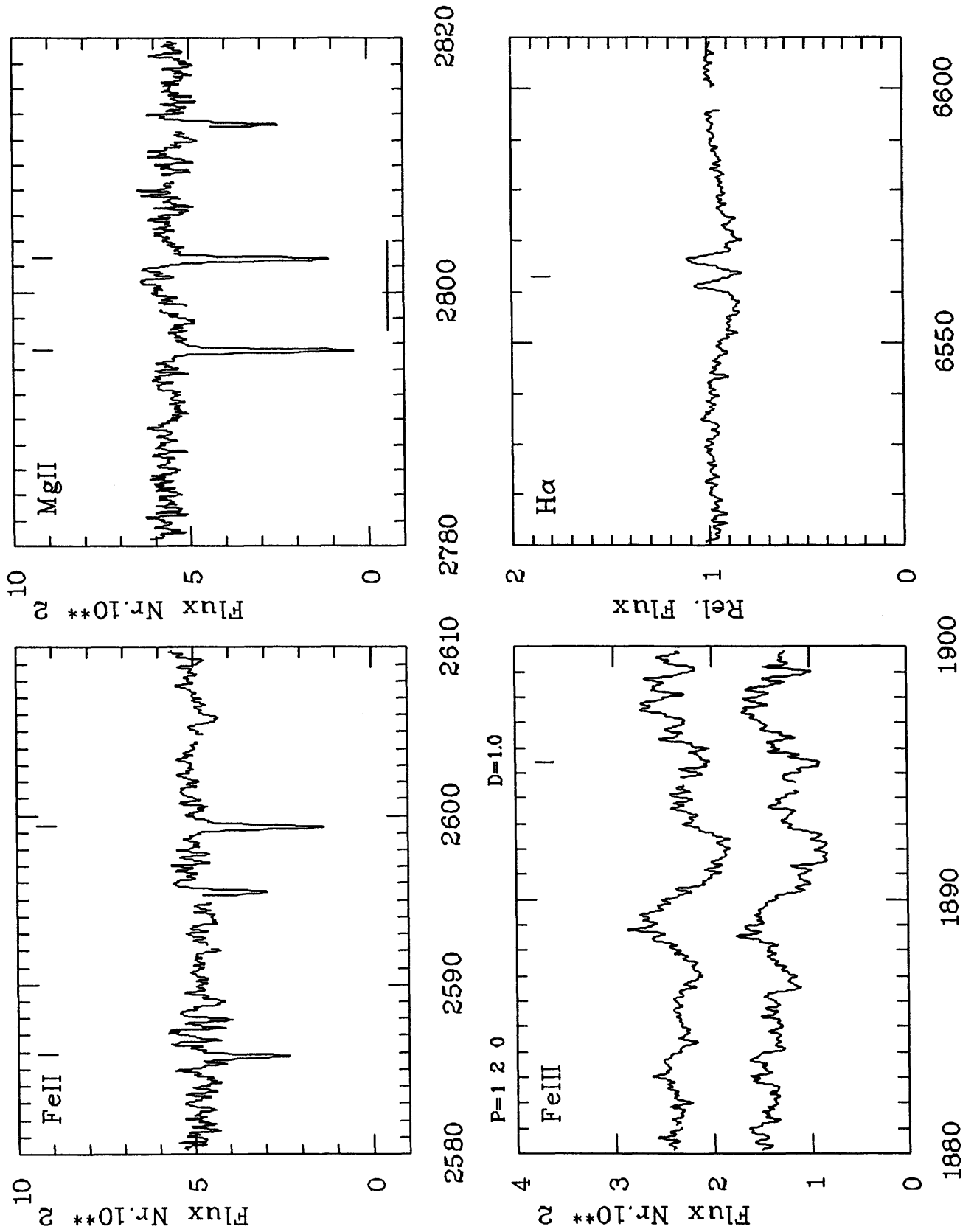


IUE 3 20439 L 83.07.10 - 3 21494 L 83.11.09
 IUE 2 16326 L 83.07.10

OHP R GA8379 88.11.27

HD 192685 B3Ve

vsini 250

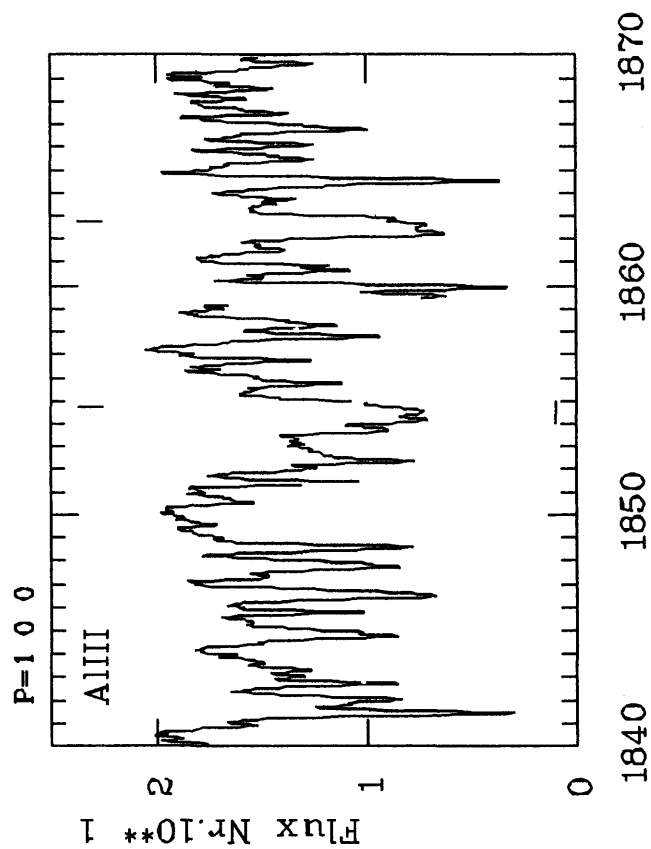
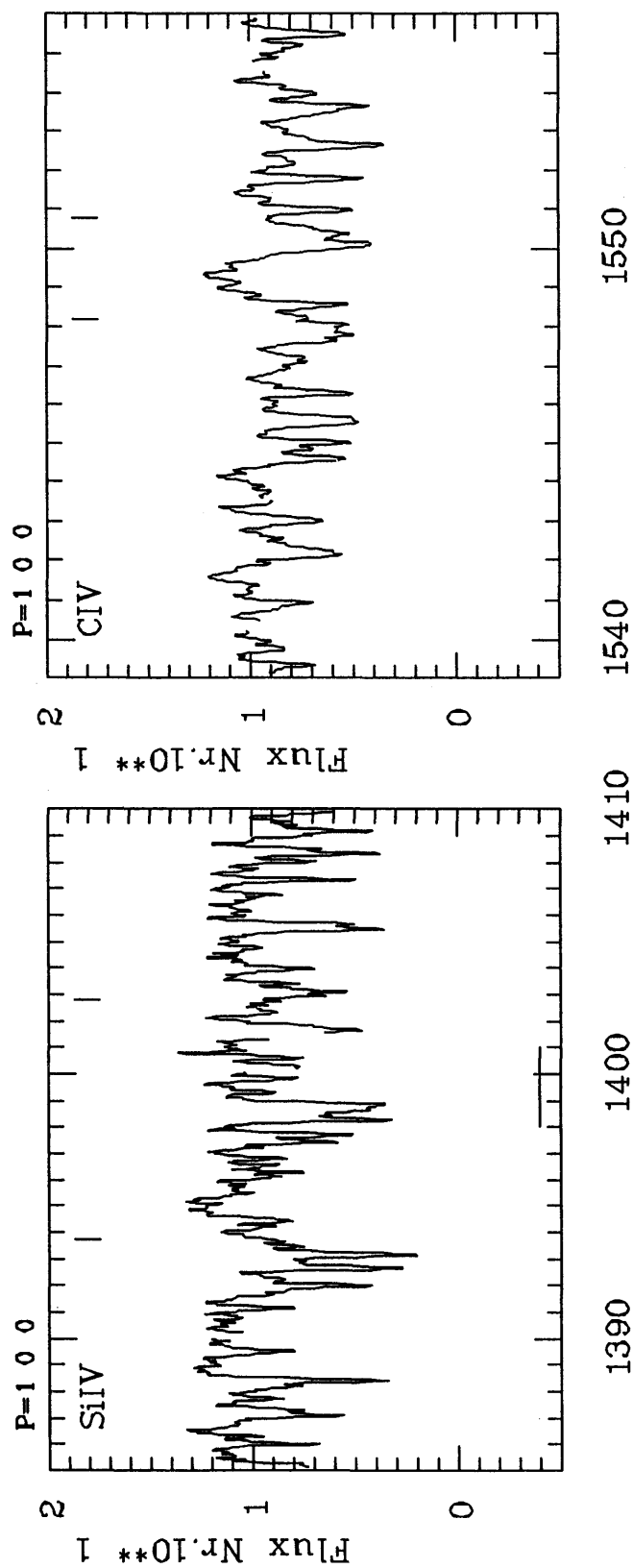


IUE 3 20439 L 83.07.10 - 3 21494 L 83.11.09
 IUE 2 16326 L 83.07.10

OHP R GA8379 88.11.27

HD 193182 B9IIIesh

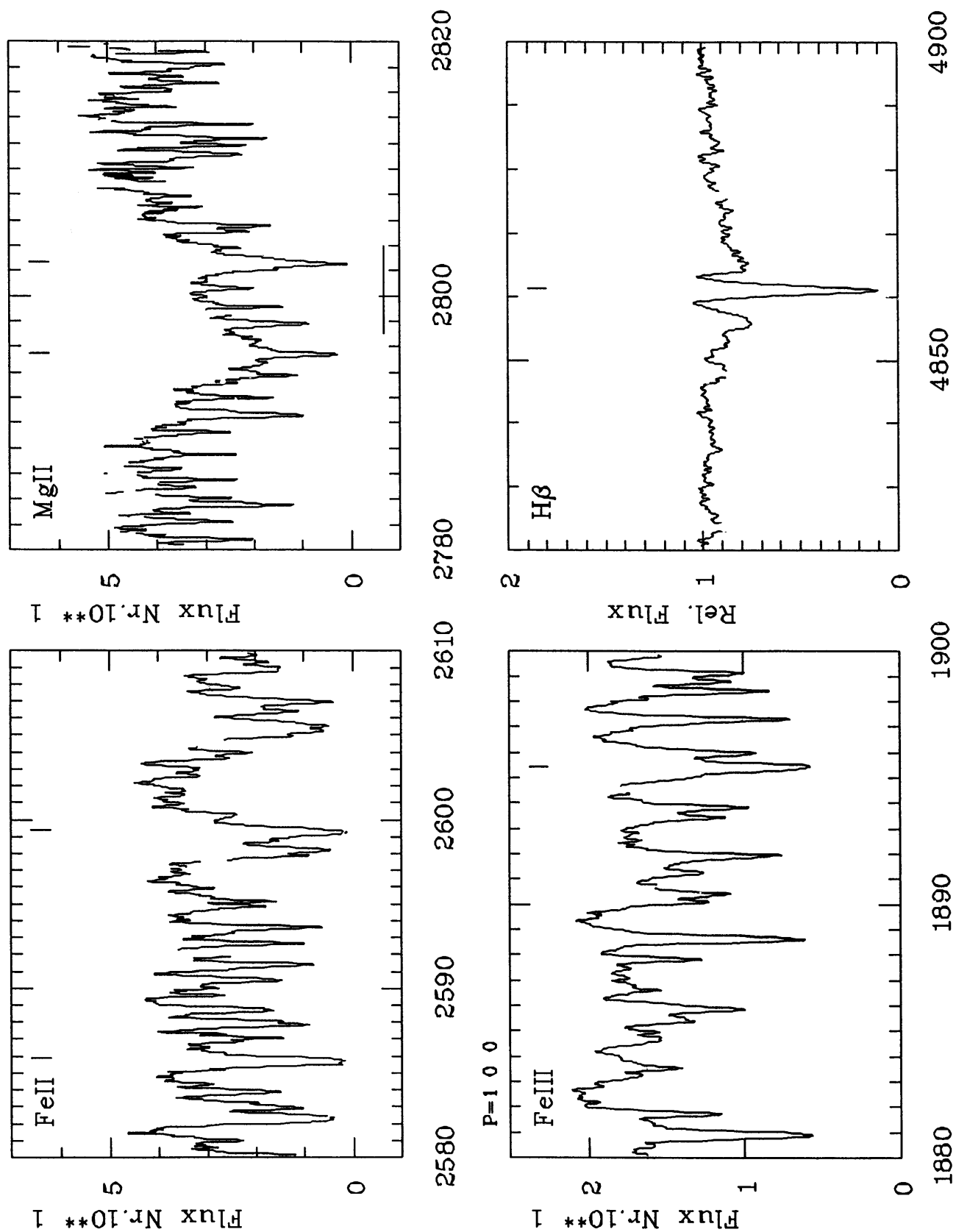
vsini 200



IVE 3 18154 L 82.09.29
 IVE 2 14294 L 82.09.29
 OHP B GB2537 73.07.30

HD 193182 B9IIIesh

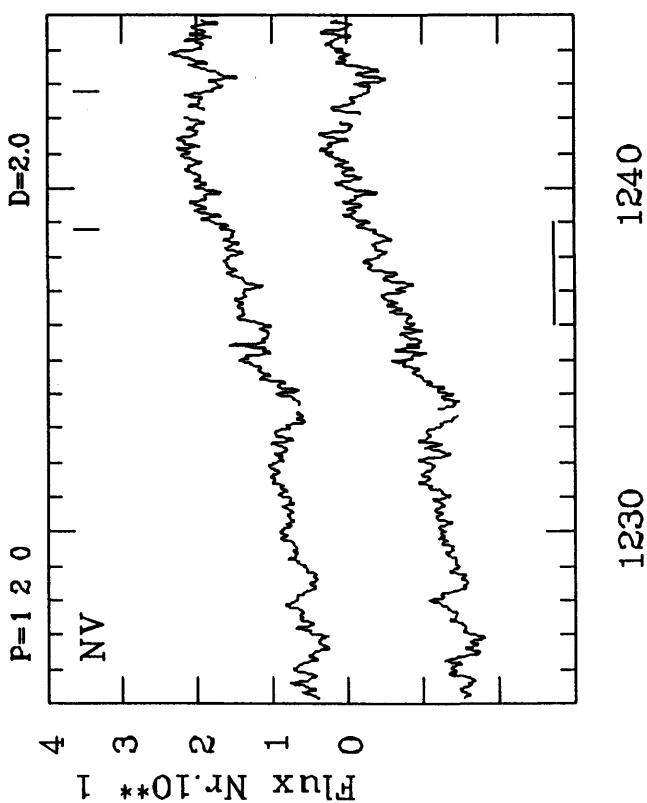
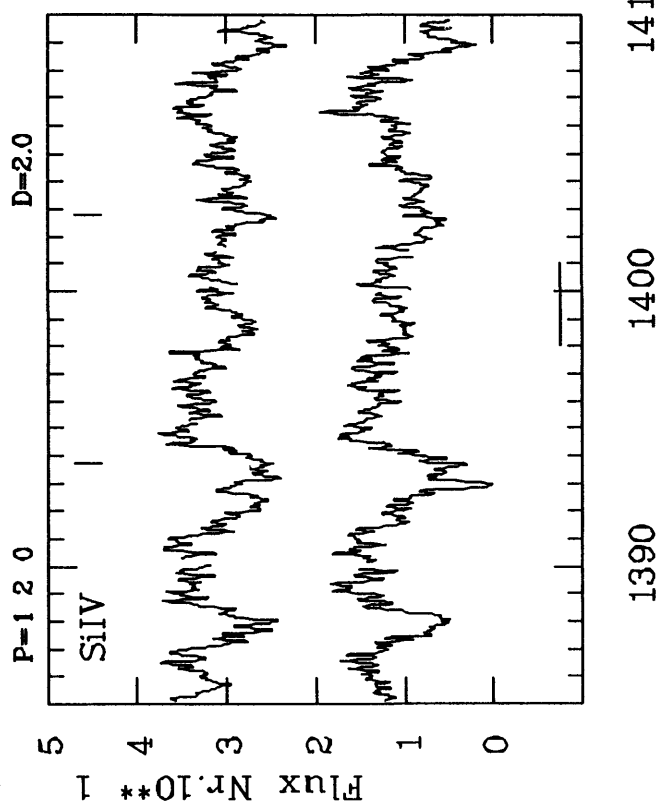
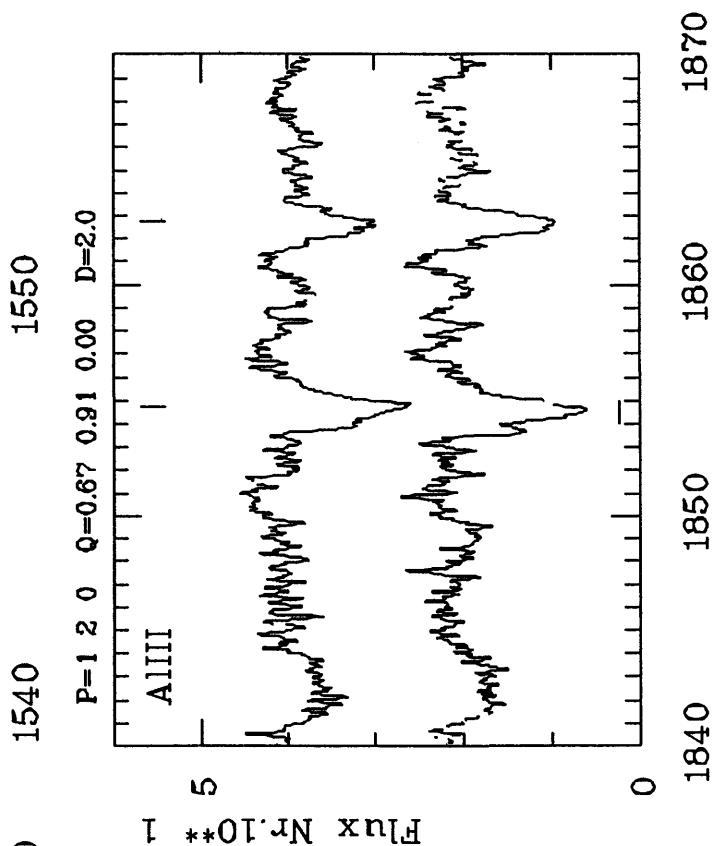
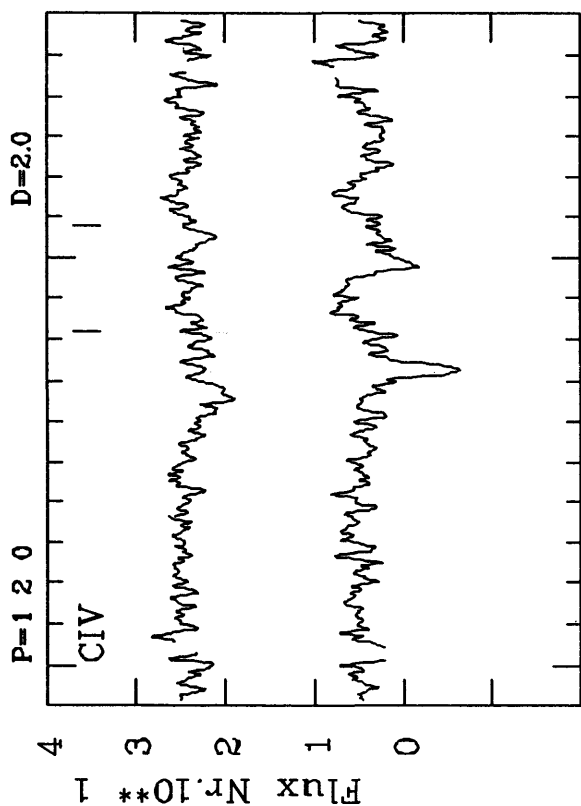
vsini 200



IUE 3 18154 L 82.09.29
 IUE 2 14294 L 82.09.29
 OHP B GB2537 73.07.30

HD 193911 B6IVe

vsini 200



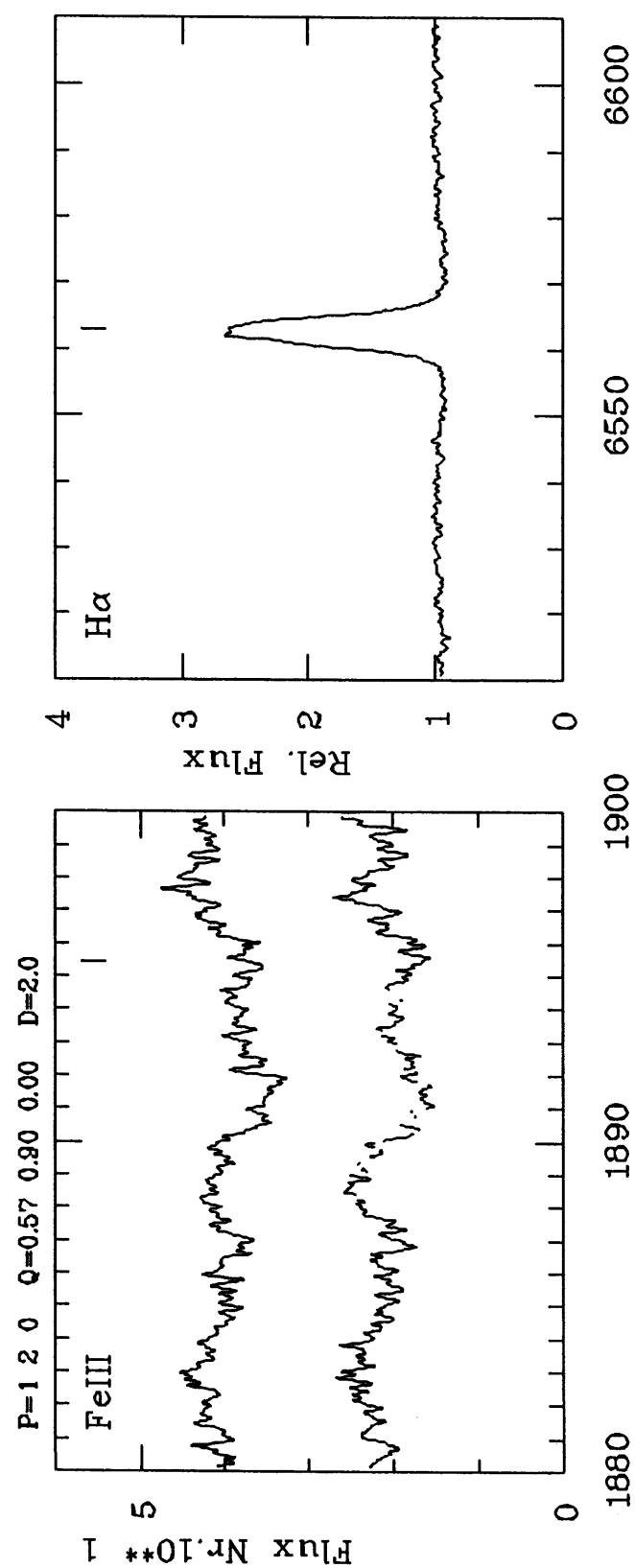
IUE 3 28102 L 86.04.05 - 3 29406 L 86.10.08

OHP R GA8370

88.11.26

HD 193911 B6IVe

vsini 200

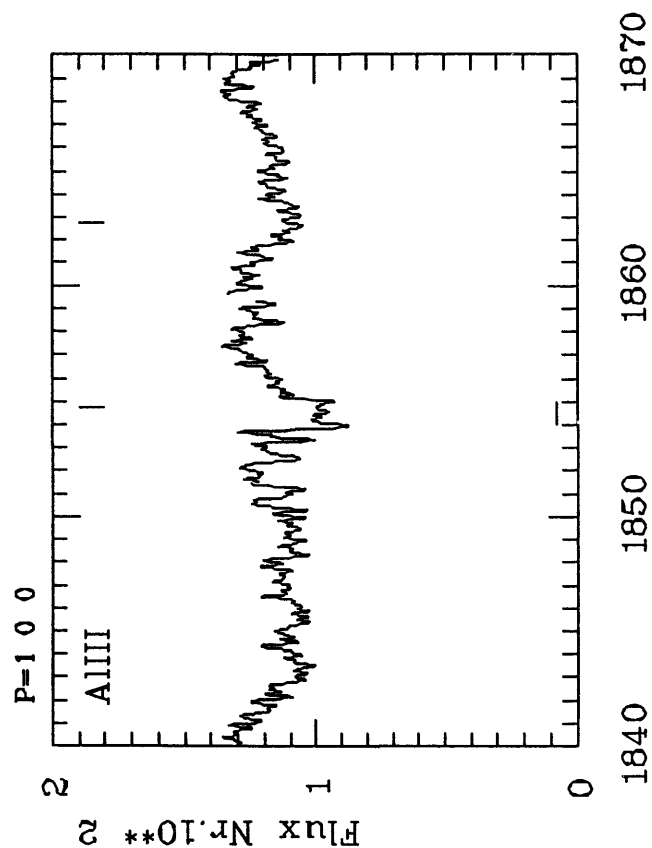
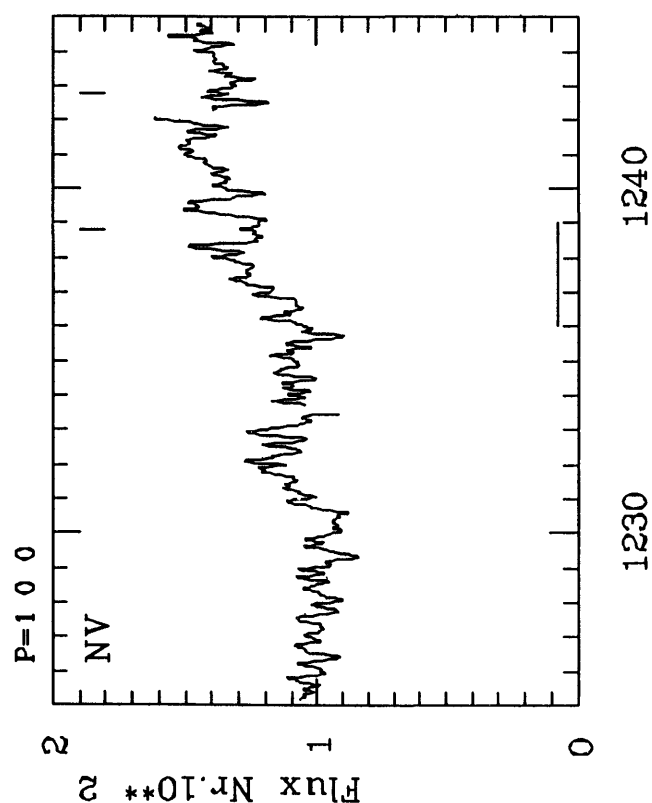
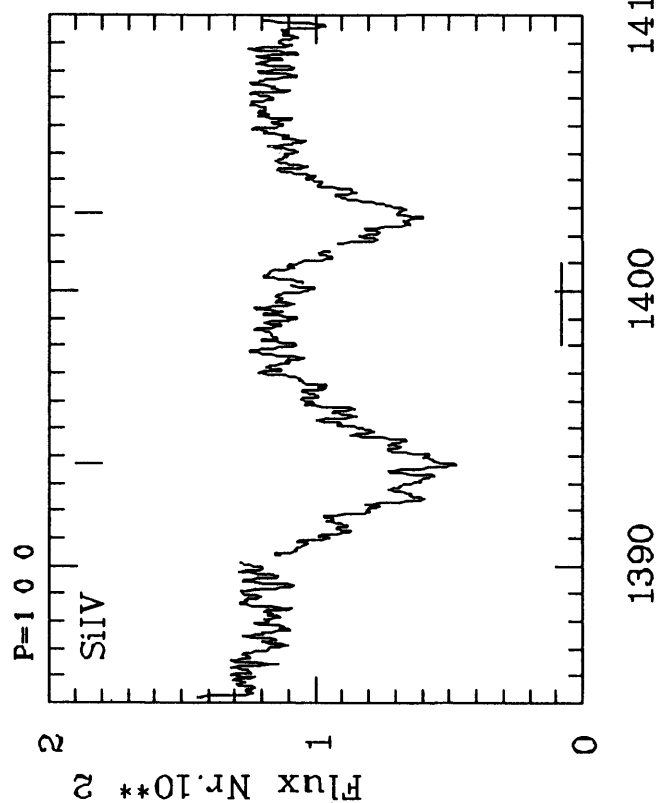
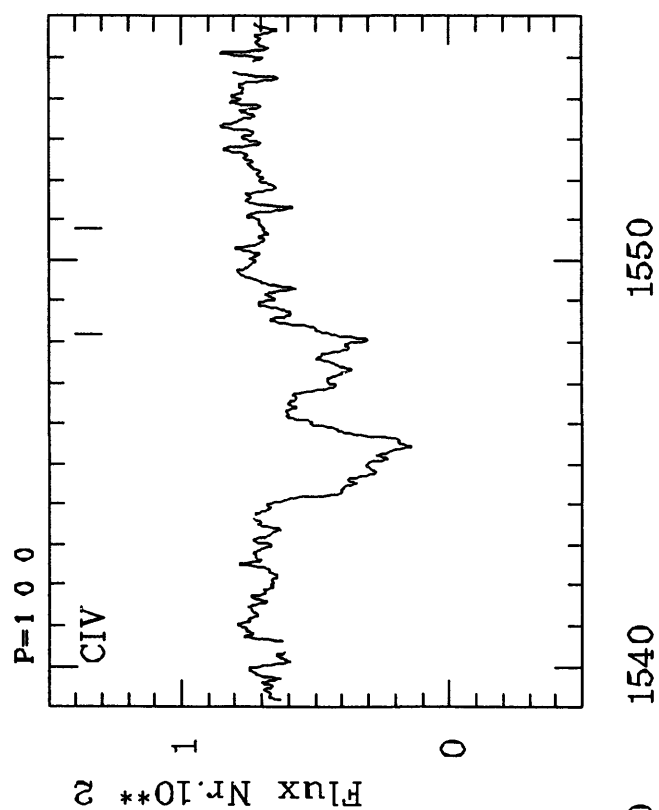


IUE 3 28102 L 86.04.05 - 3 29406 L 86.10.08

OHP R GA8370 88.11.26

HD 194335 B2IIIe

vsini 350

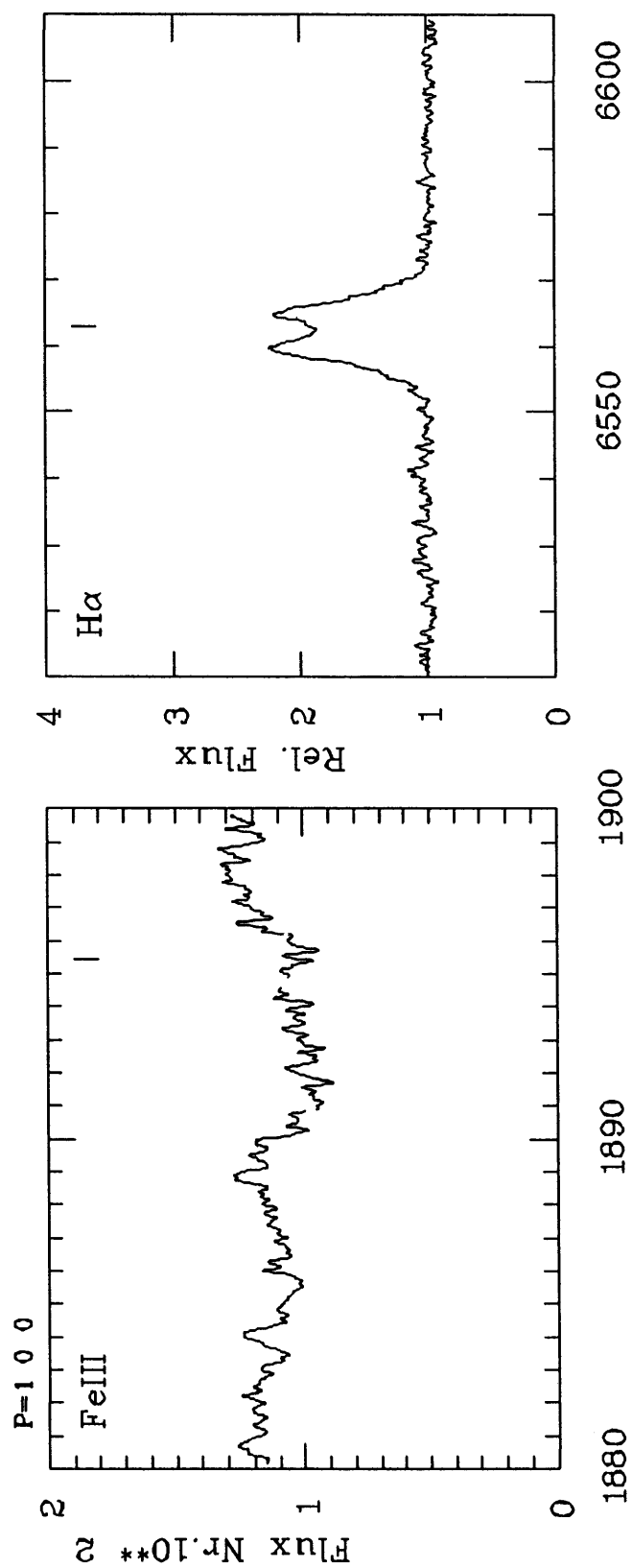


IUE 3 19938 L 83.05.08

OHP R GA8358 88.11.23

HD 194335 B2IIIe

vsini 350



IUE 3 19938 L 83.05.08

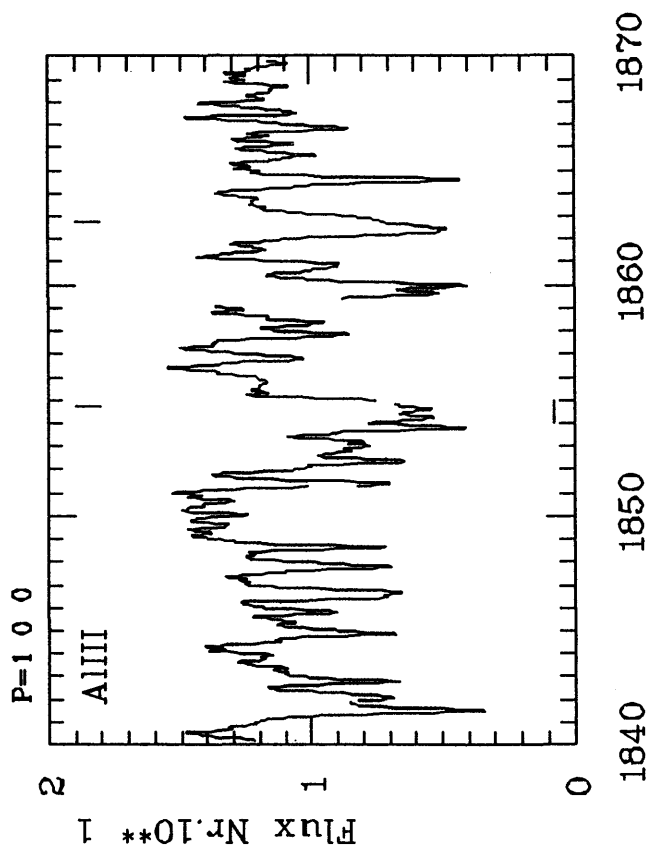
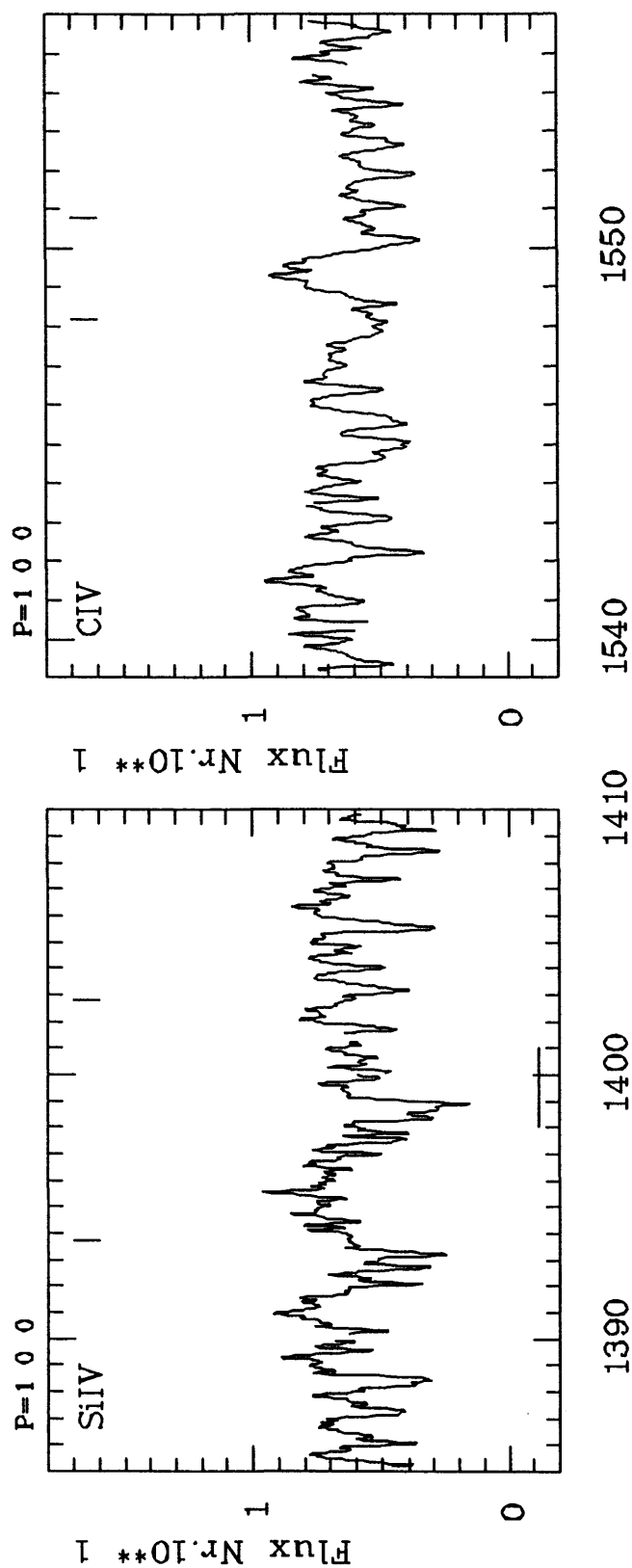
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OHP R GA8358 88.11.23

HD 195325 B8-9:esh

vsini 280:

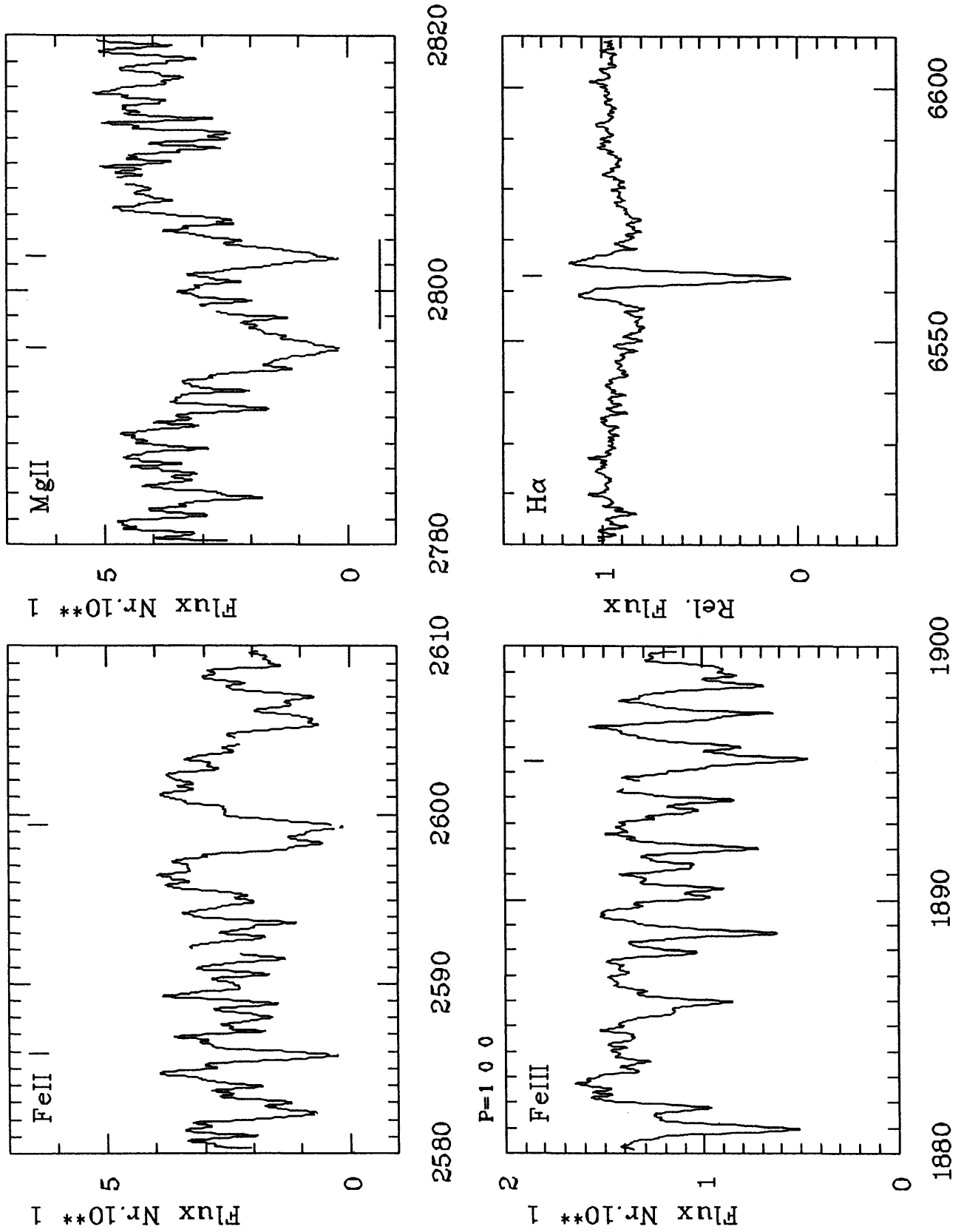


IUE 3 18141 L 82.09.28
 IUE 2 14280 L 82.09.28

OHP R GA8363 88.11.24

HD 195325 B8-9:esh

vsini 280:



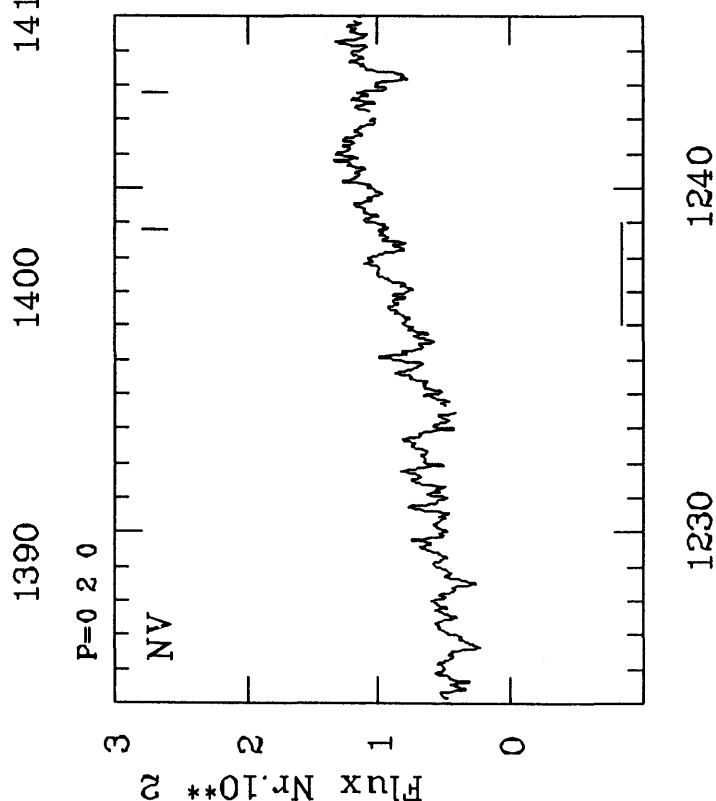
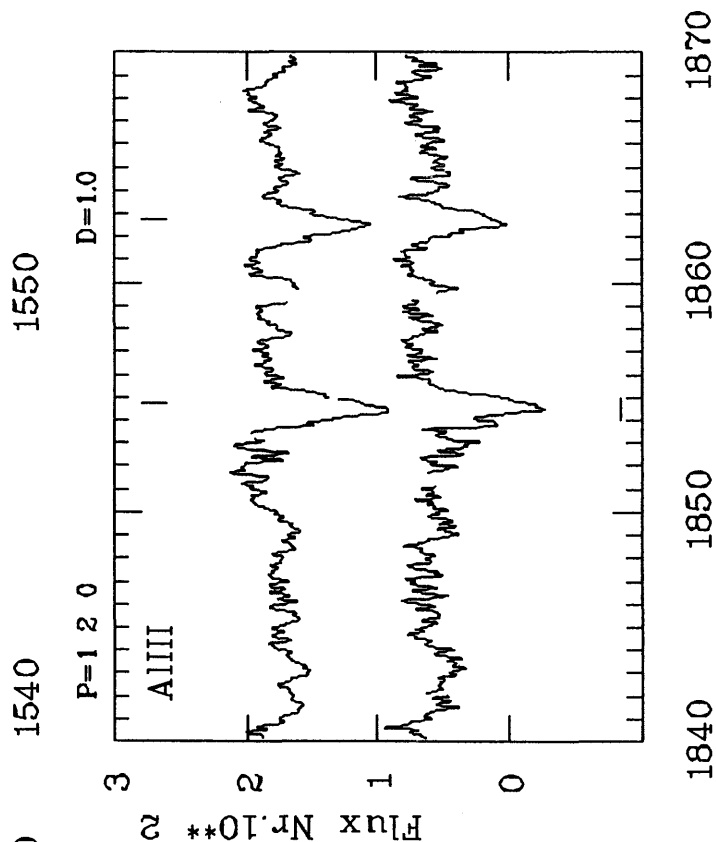
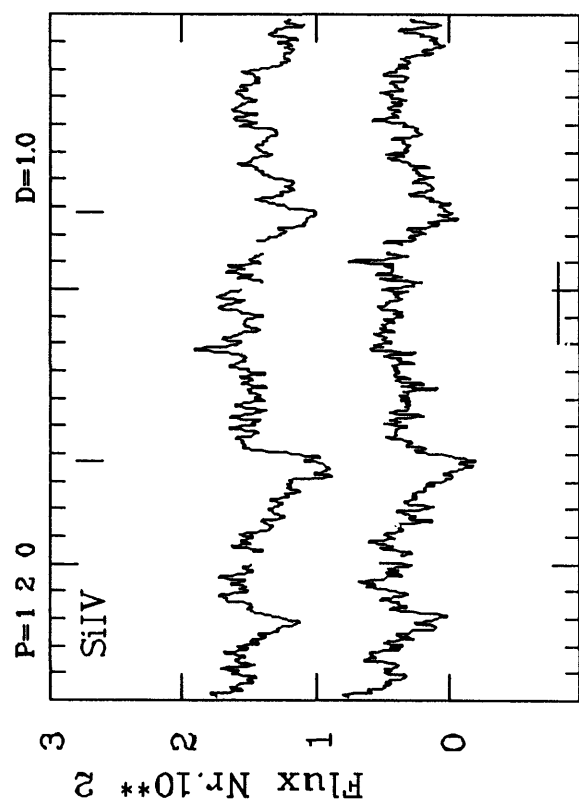
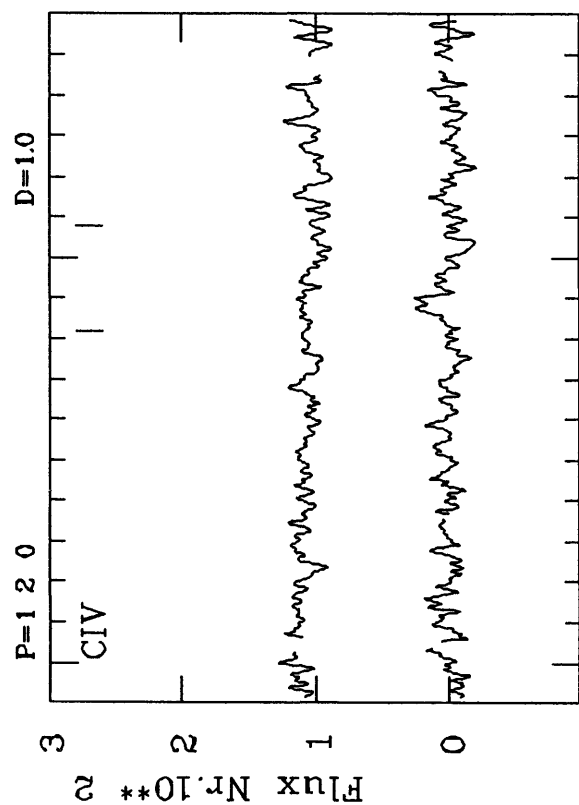
IUE 3 18141 L 82.09.28

IUE 2 14280 L 82.09.28

OHP R GA8363 88.11.24

HD 198183 B5Ve

vsini 120



IUE 3 14209 L 81.06.07 - 3 25780 L 85.04.26

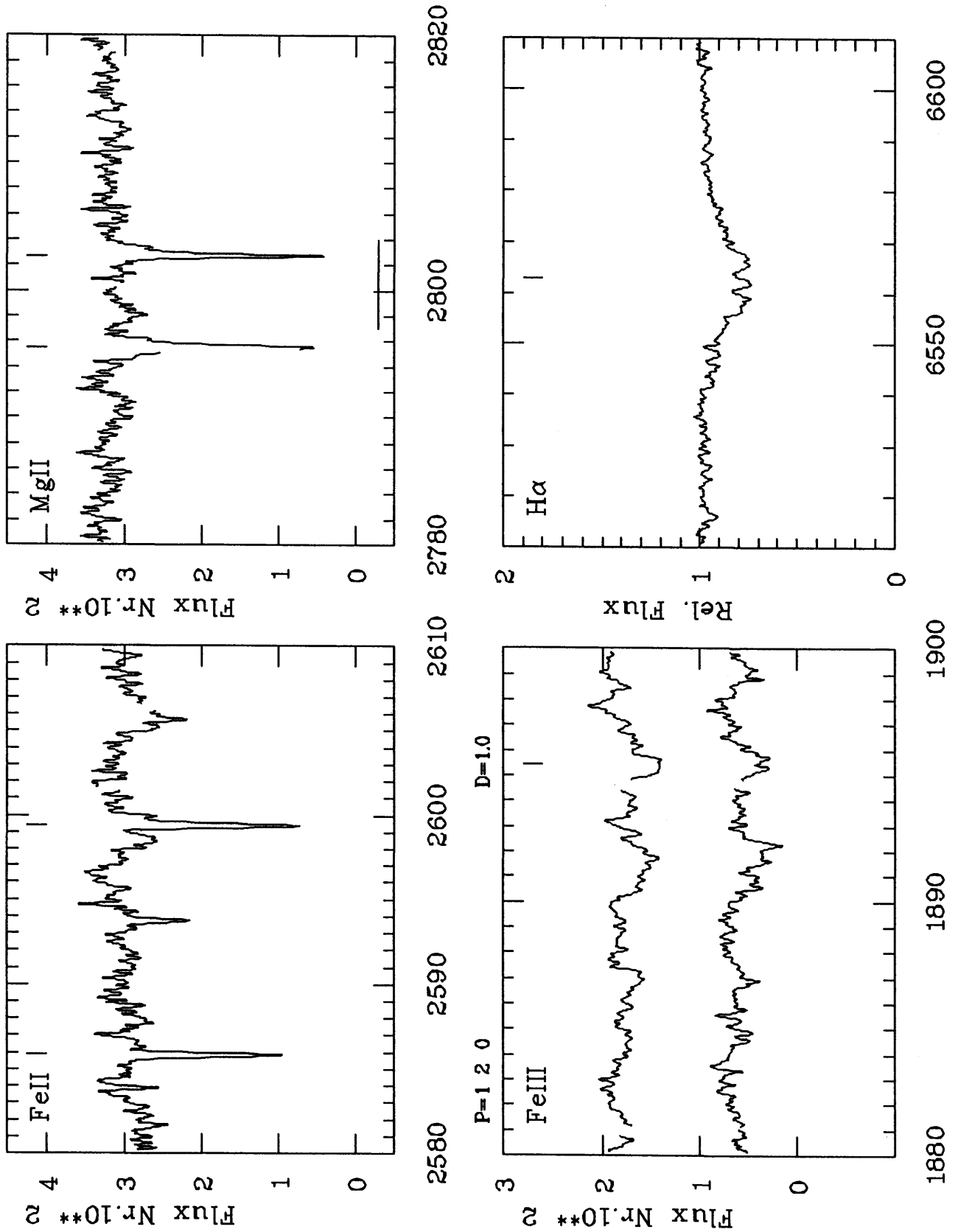
IUE 1 05830 L 85.04.26

OHP R GA8380

88.11.27

HD 198183 B5Ve

vsini 120



IUE 3 14209 L 81.06.07 - 3 25780 L 85.04.26

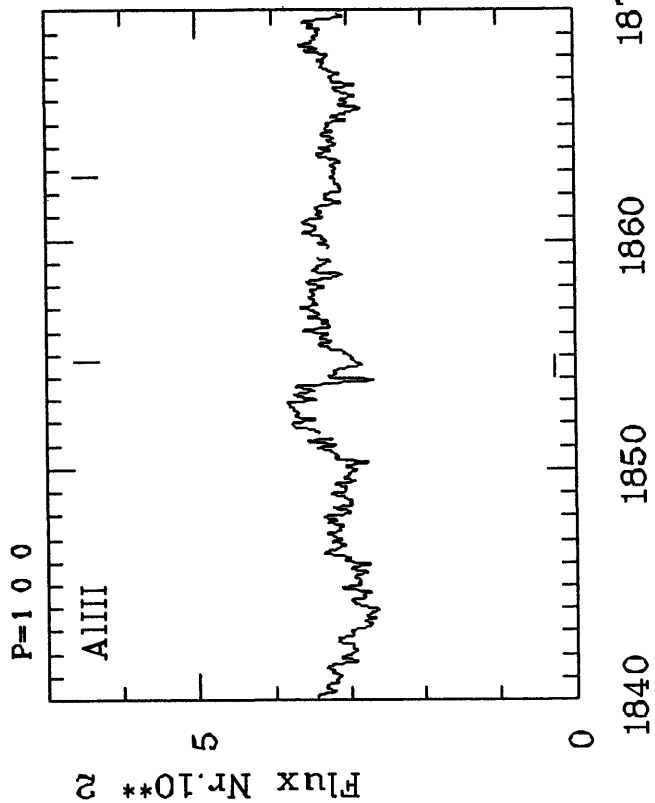
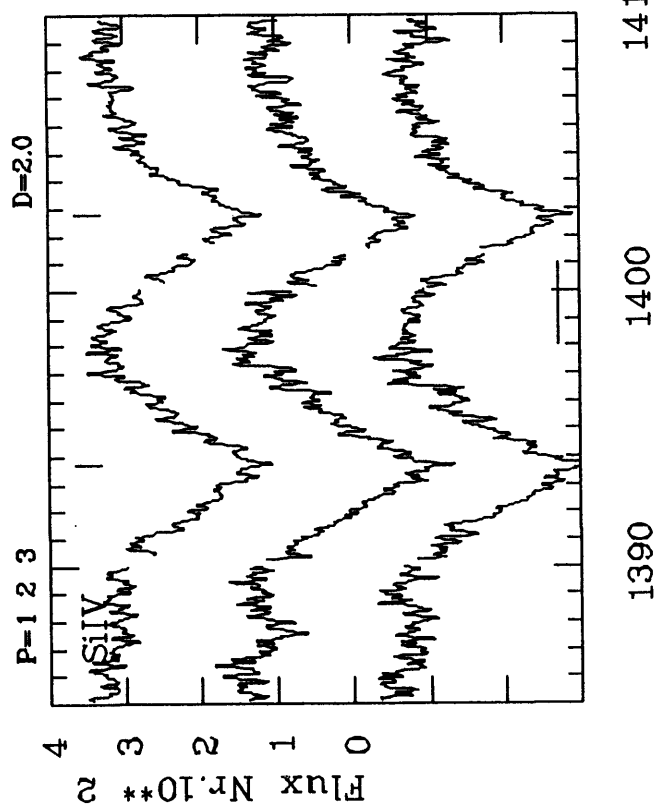
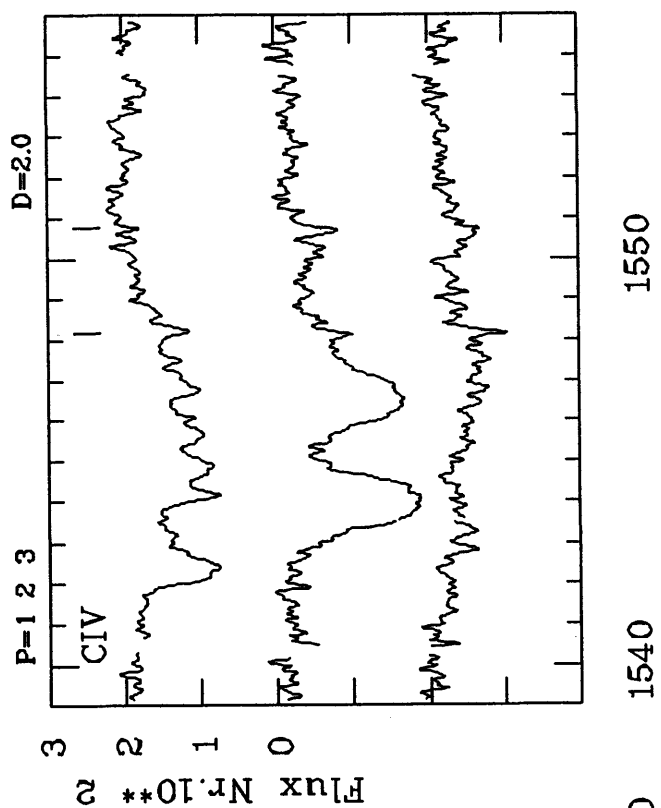
IUE 1 05830 L 85.04.26

OHP R GA8380

88.11.27

HD 200120 B1Ve

vsini 260



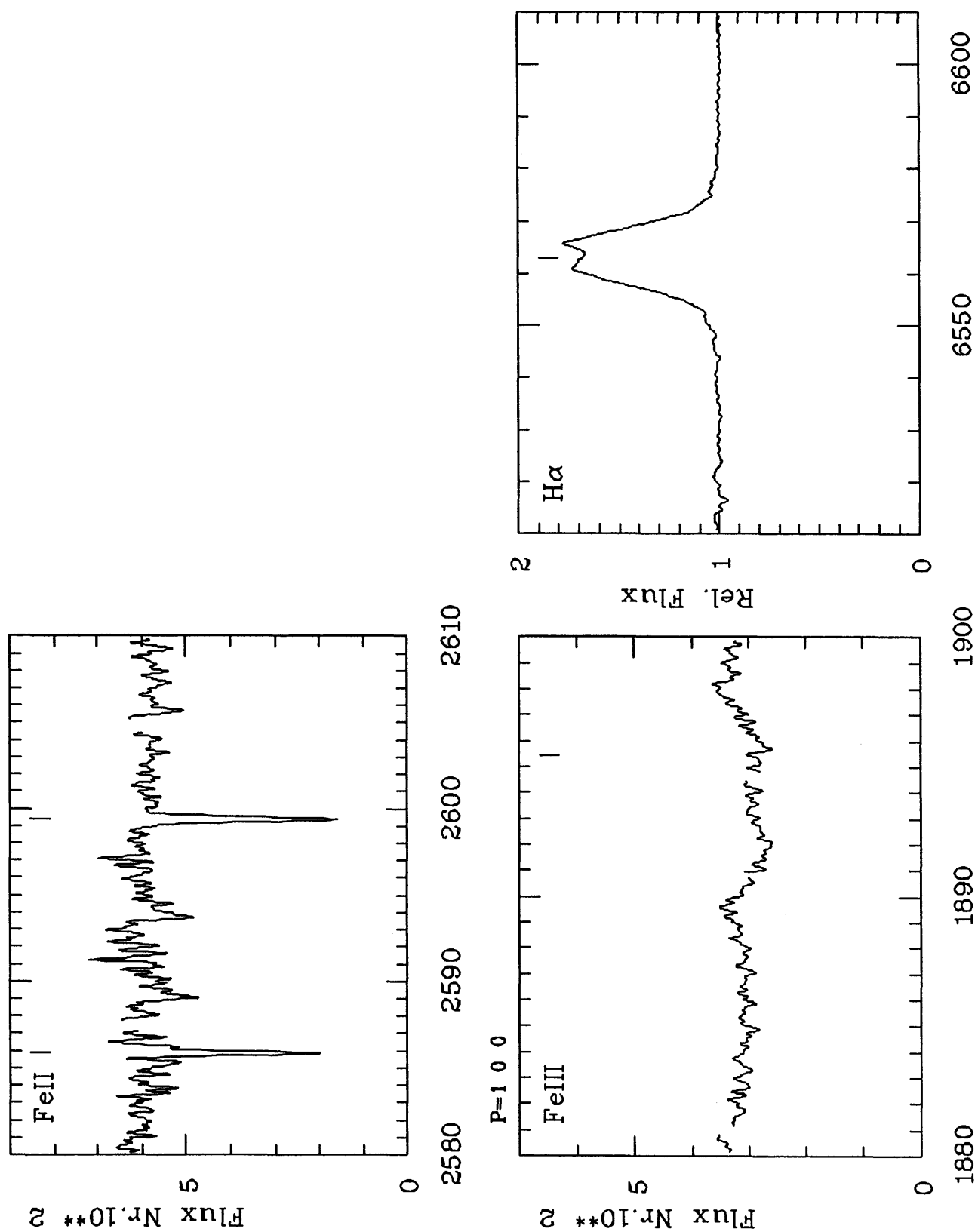
IUE 3 09127 L 80.05.26 - 3 15483 L 81.11.12 - 3 16146 L 82.01.27
 IUE 2 07859 L 80.05.26

OHP R CCD5

87.11.29

HD 200120 B1Ve

vsini 260



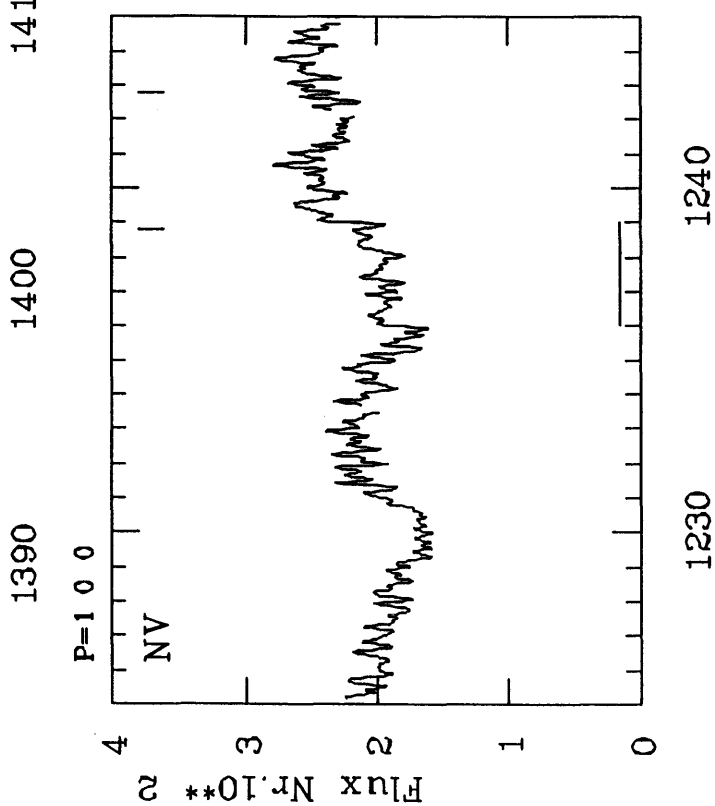
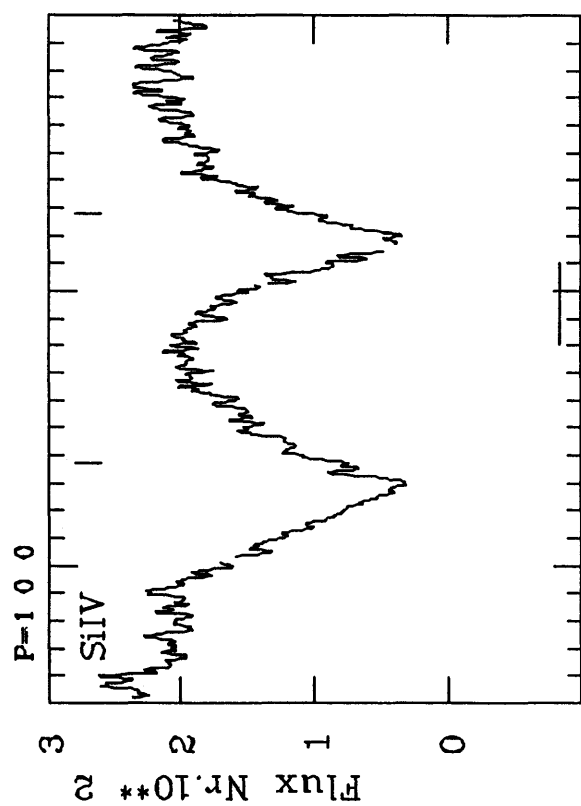
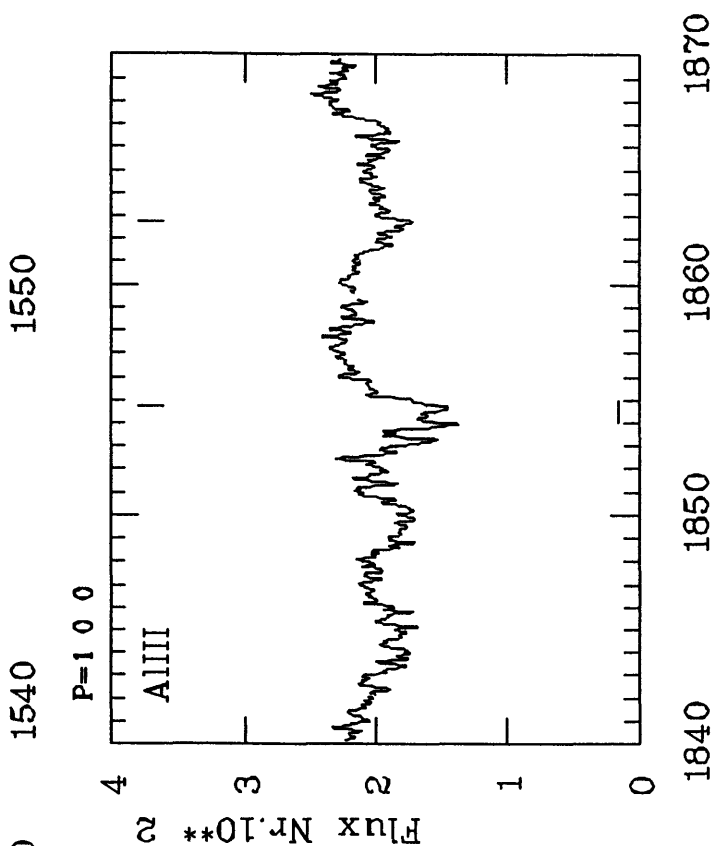
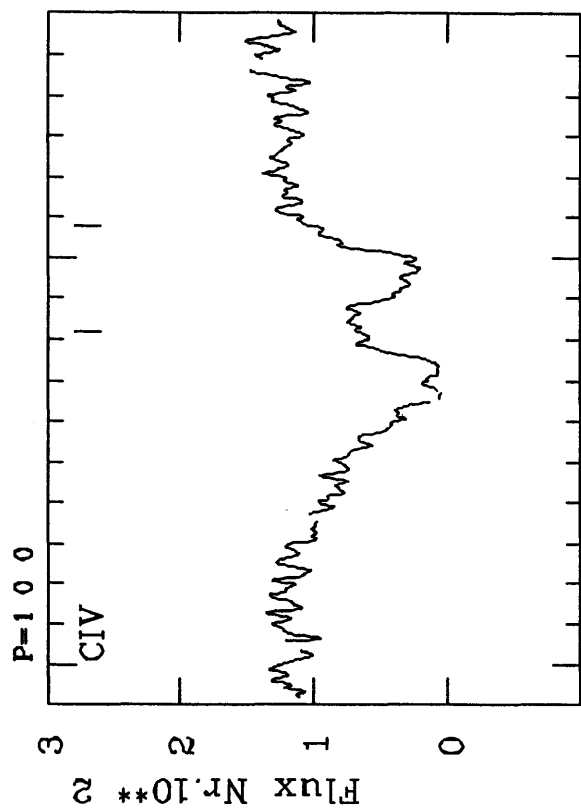
IUE 3 09127 L 80.05.26 - 3 15483 L 81.11.12 - 3 16146 L 82.01.27
 IUE 2 07859 L 80.05.26

OHP R CCD5

87.11.29

HD 200310 B1Ve

vsini 300

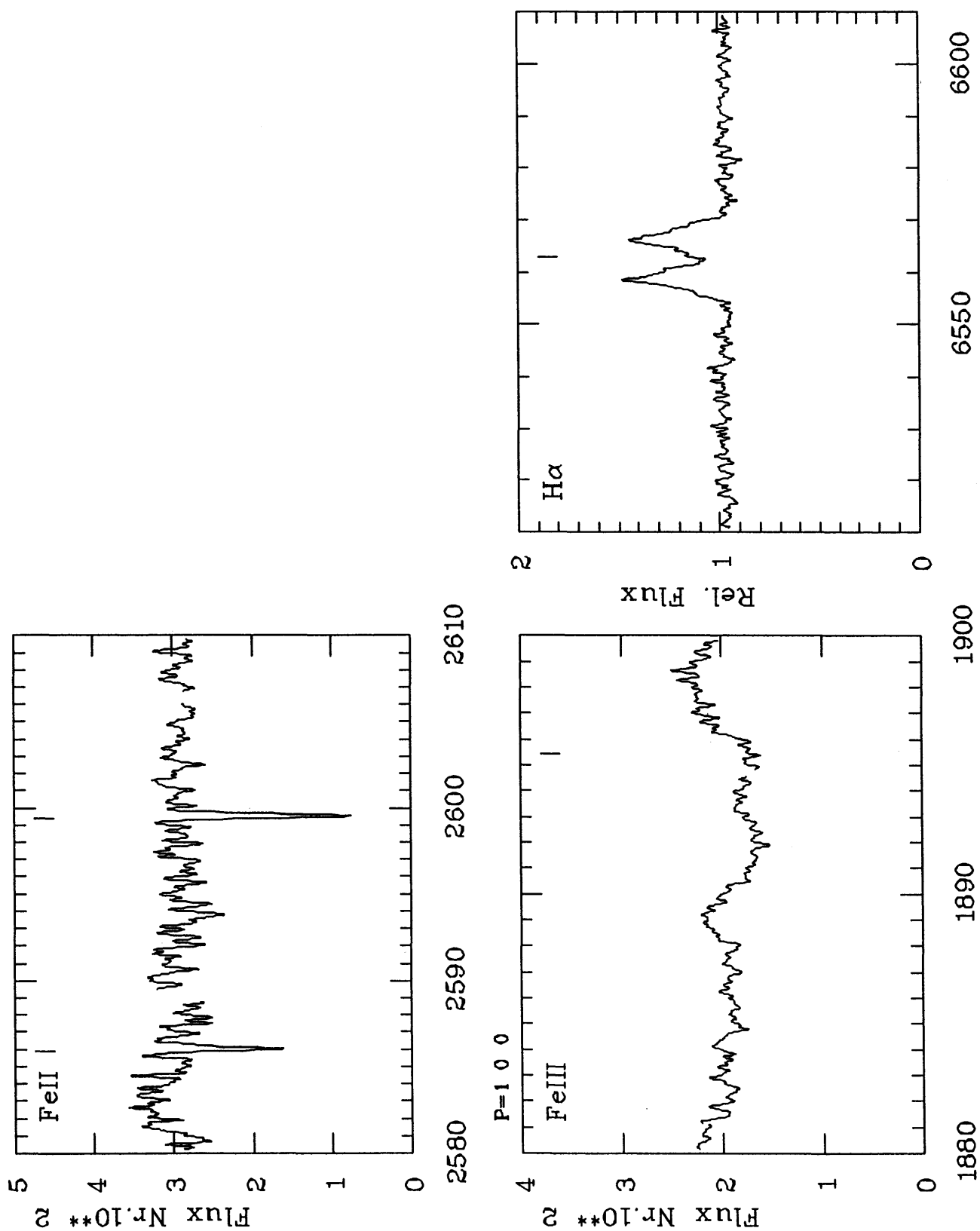


IUE 3 19939 L 83.05.08
 IUE 2 09544 S 80.12.21

OHP R GA8350 88.11.22

HD 200310 B1Ve

vsini 300

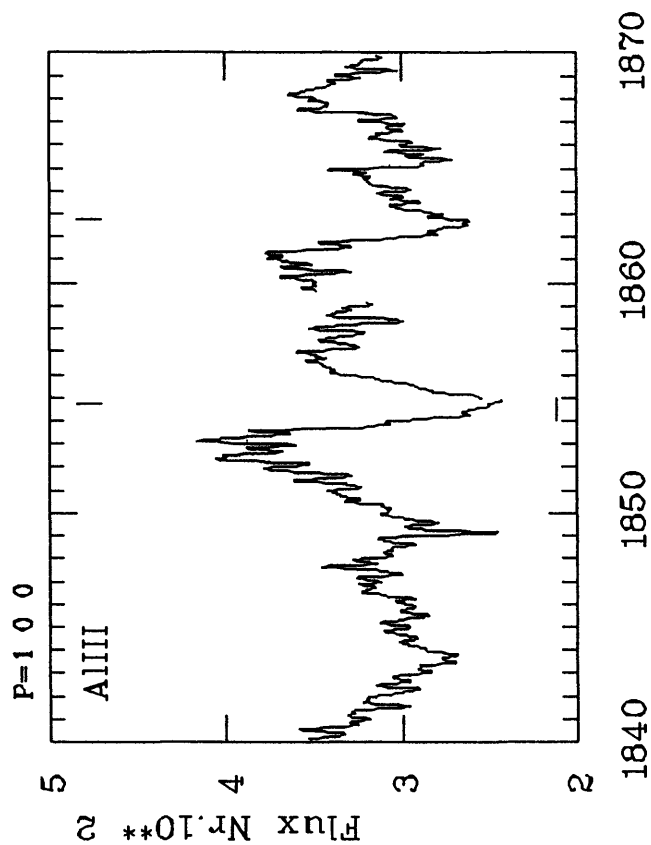
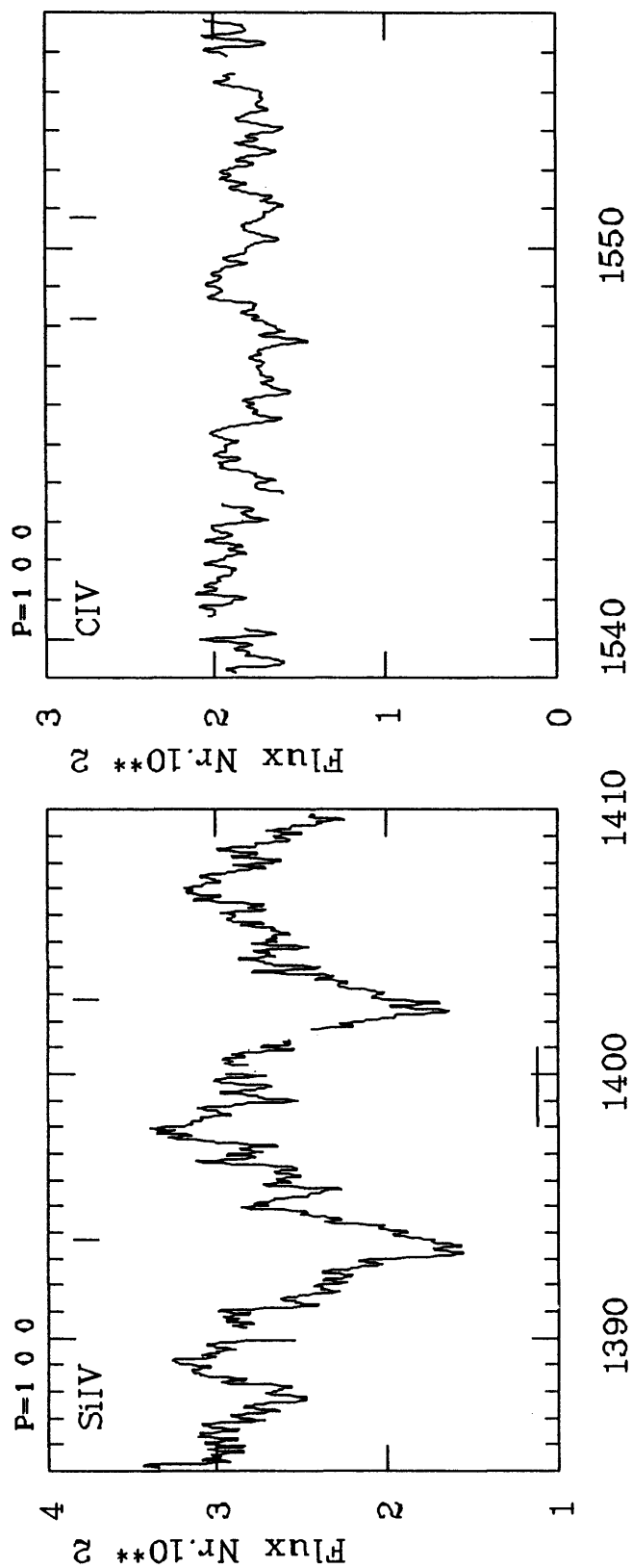


IUE 3 19939 L 83.05.08
 IUE 2 09544 S 80.12.21

OHP R GA8350 88.11.22

HD 202904 B2.5Ve

vsini 180



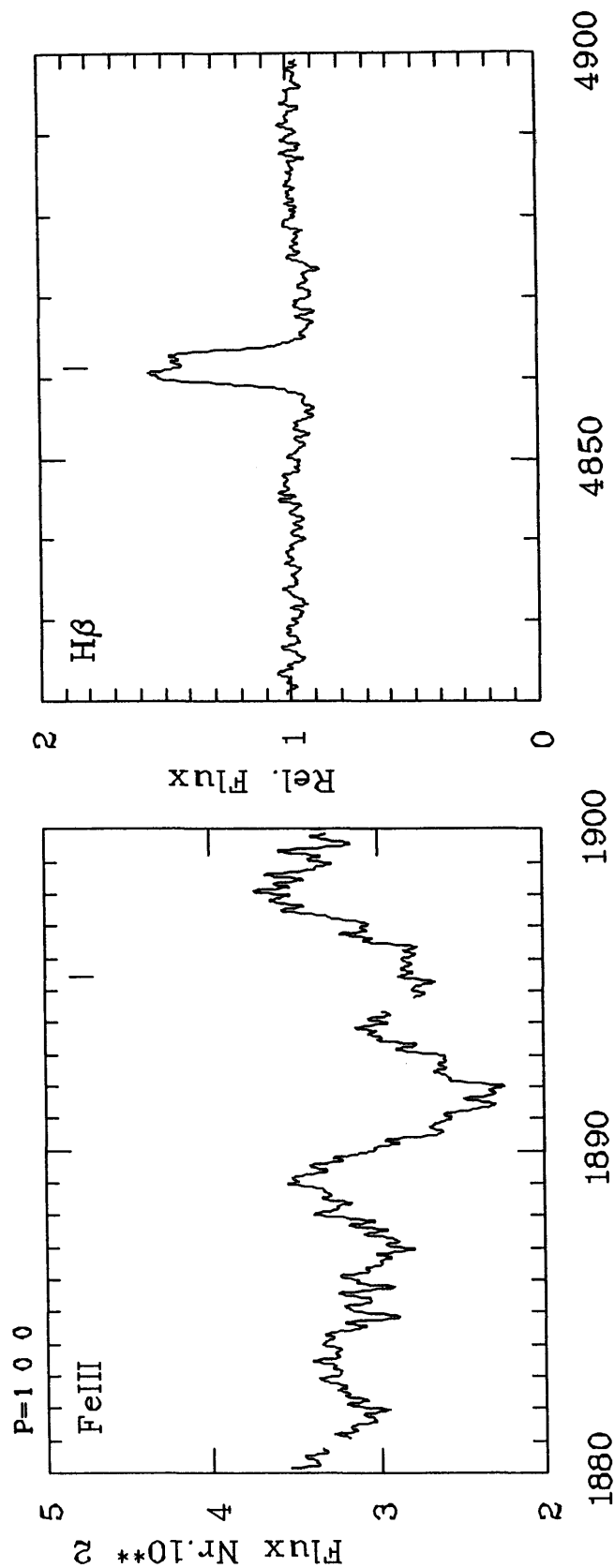
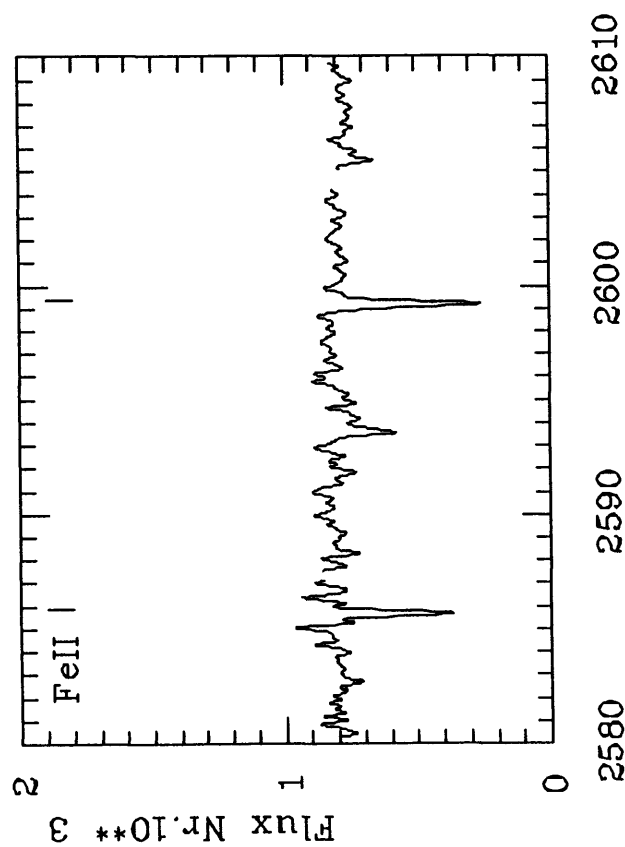
IUE 3 08601 L 80.03.30

IUE 2 07343 L 80.03.30

OHP B GB4033 77.07.15

HD 202904 B2.5Ve

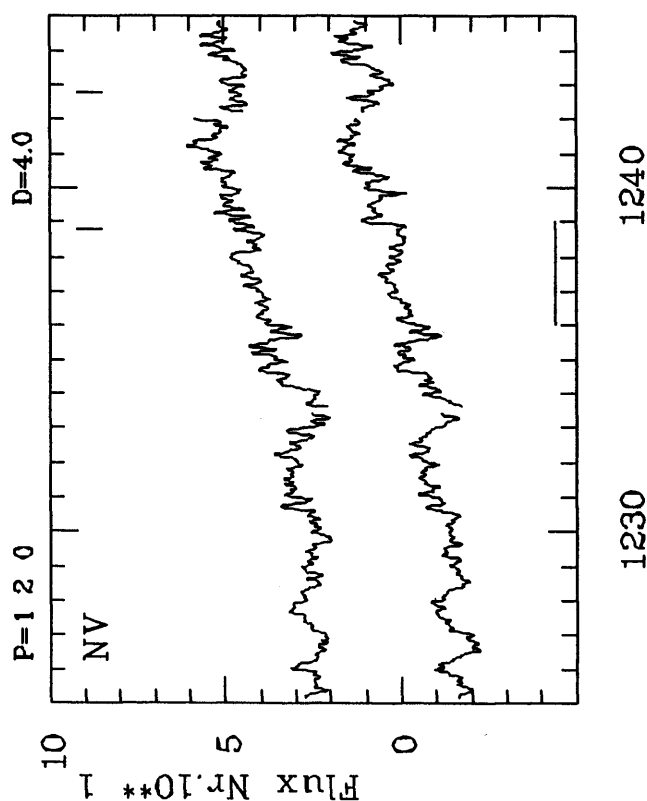
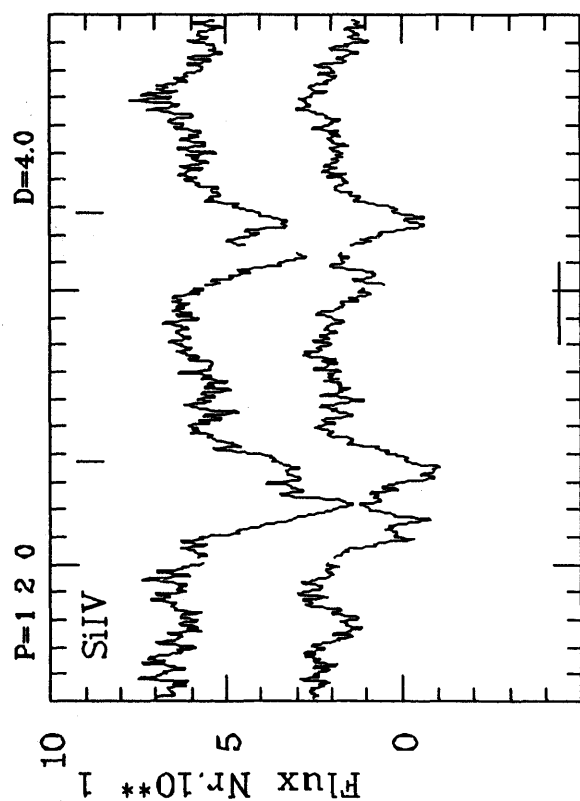
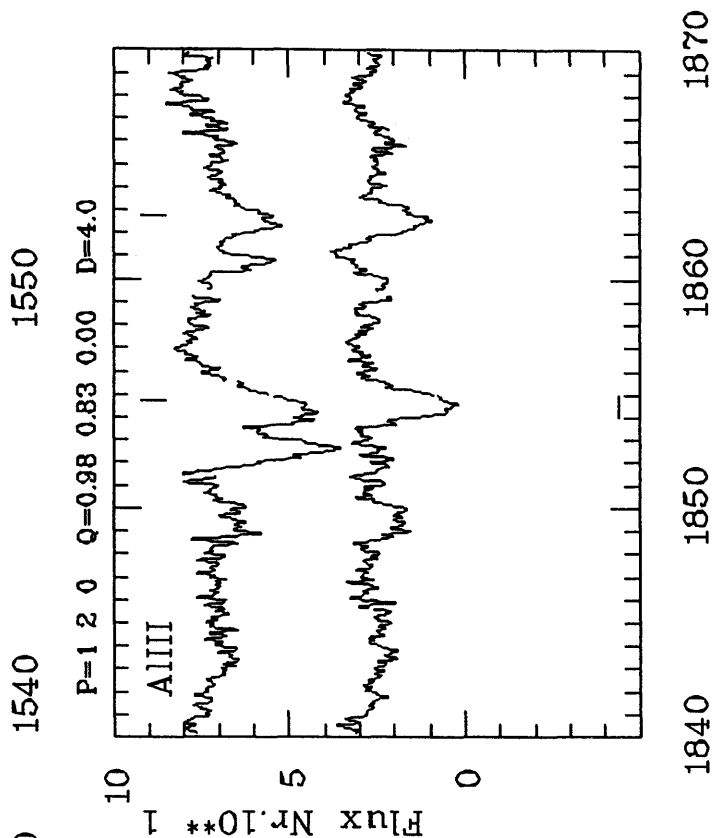
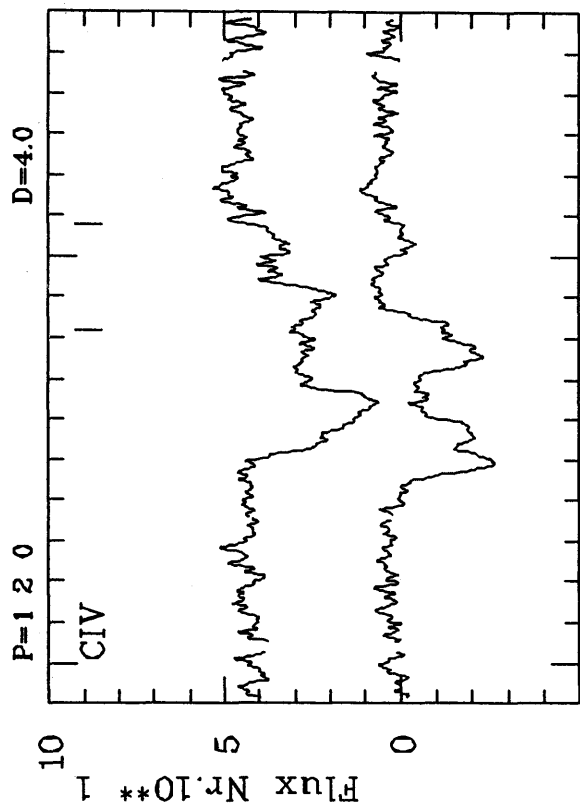
vsini 180



IUE 3 08601 L 80.03.30
 IUE 2 07343 L 80.03.30
 OHP B GB4033 77.07.15

HD 203467 B2.5Ve

vsini 150



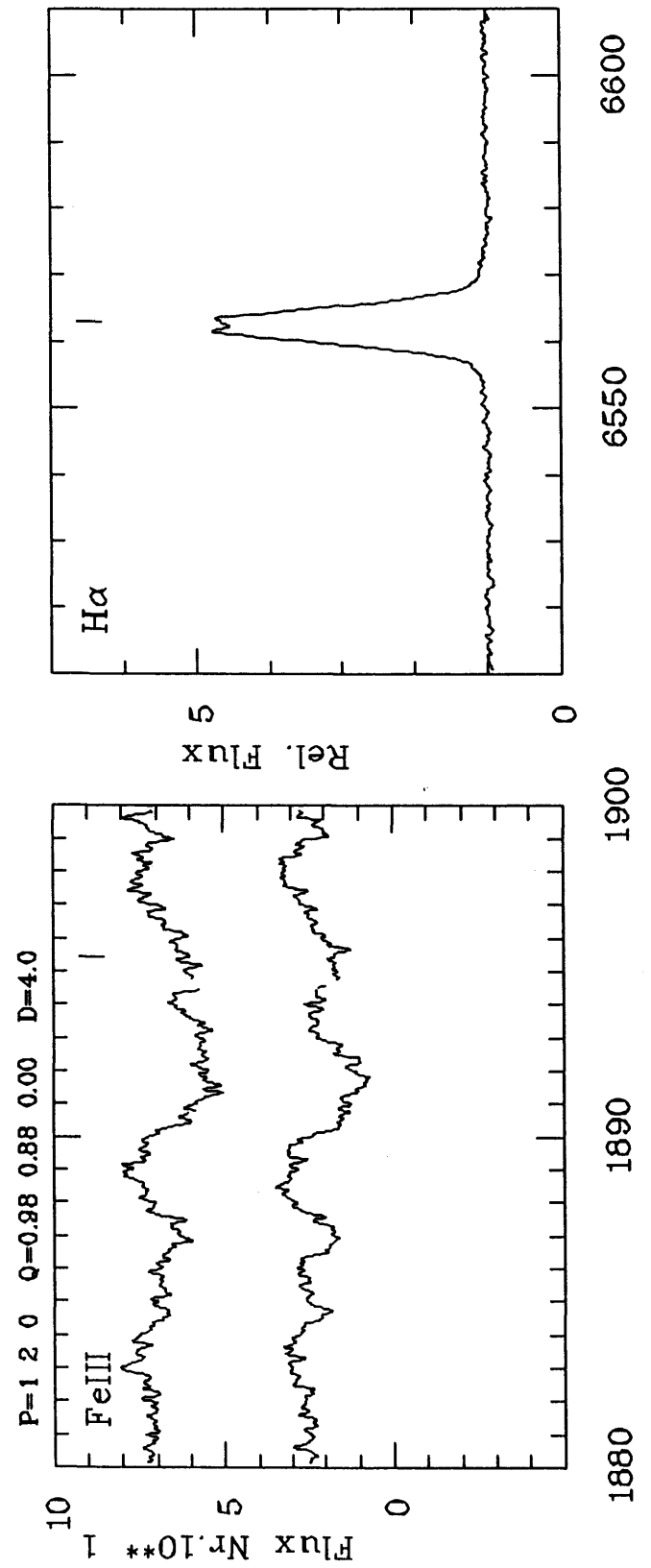
IUE 3 26827 L 85.10.02 - 3 31129 L 87.06.10

OHP R GA8352

88.11.22

HD 203467 B2.5Ve

vsini 150

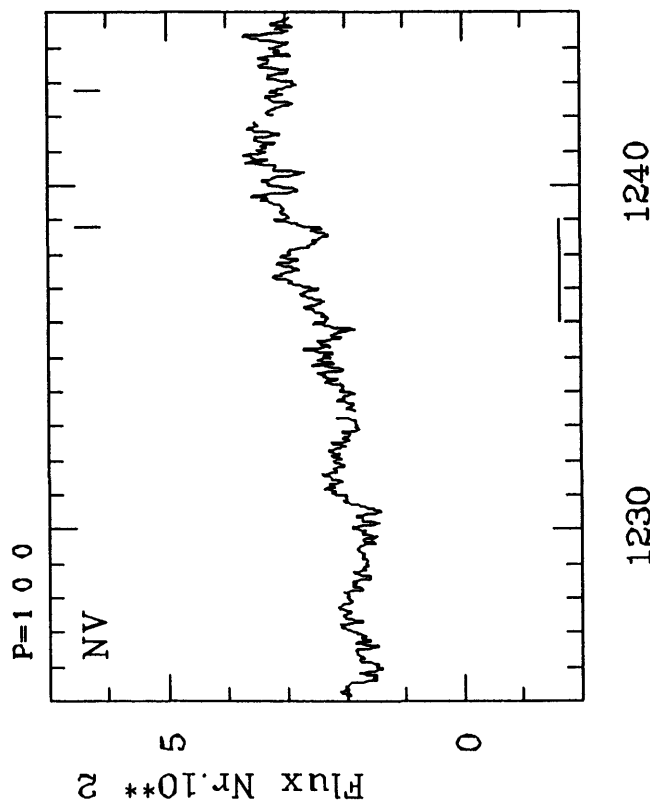
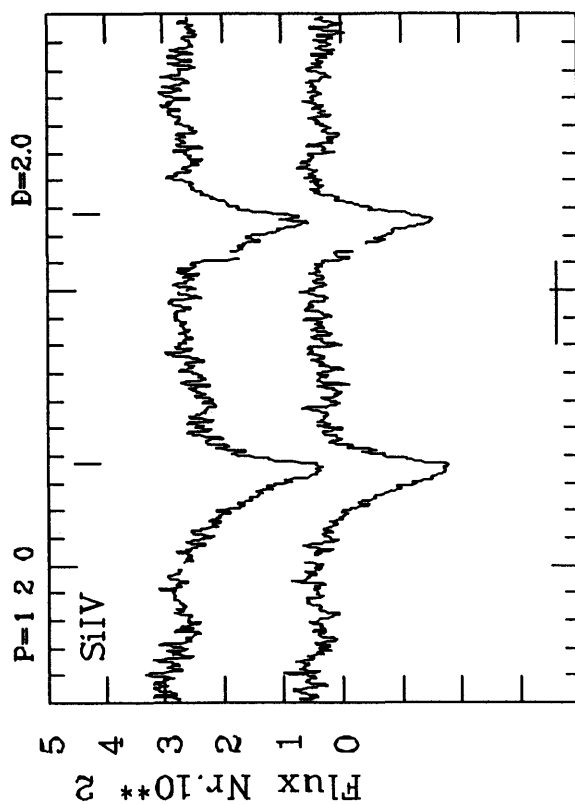
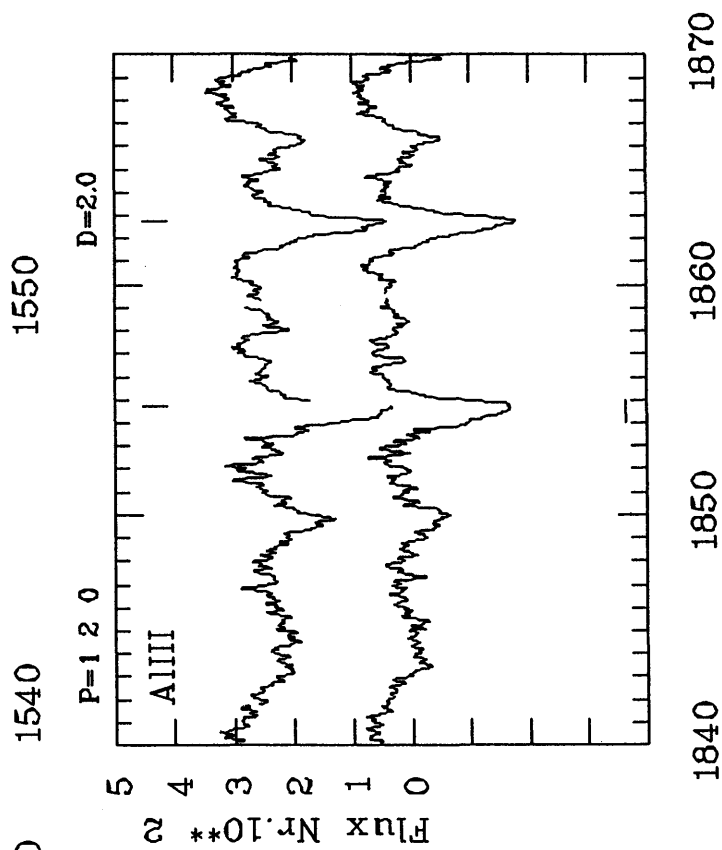
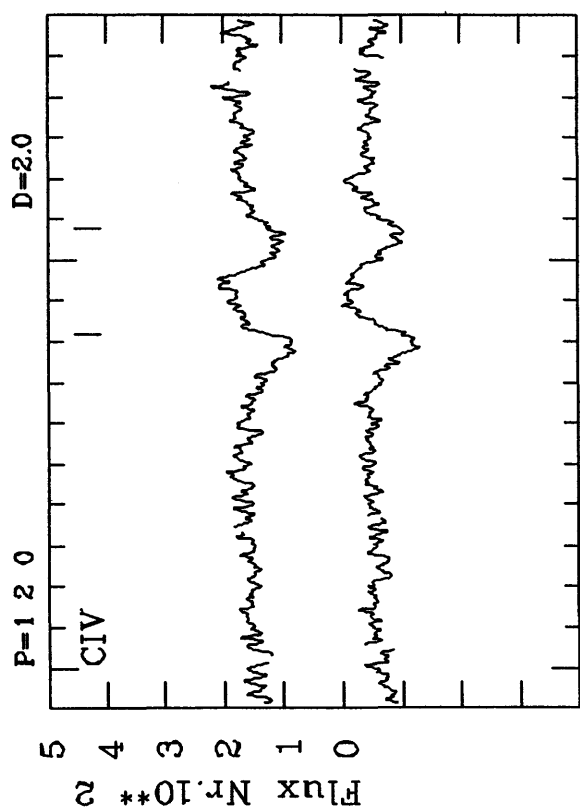


IUE 3 26827 L 85.10.02 - 3 31129 L 87.06.10

OHP R GA8352 88.11.22

HD 205637 B3IIIe

vsini 250



IUE 3 21687 L 83.12.04 - 3 28216 L 86.04.22

IUE 1 05752 L 85.04.14

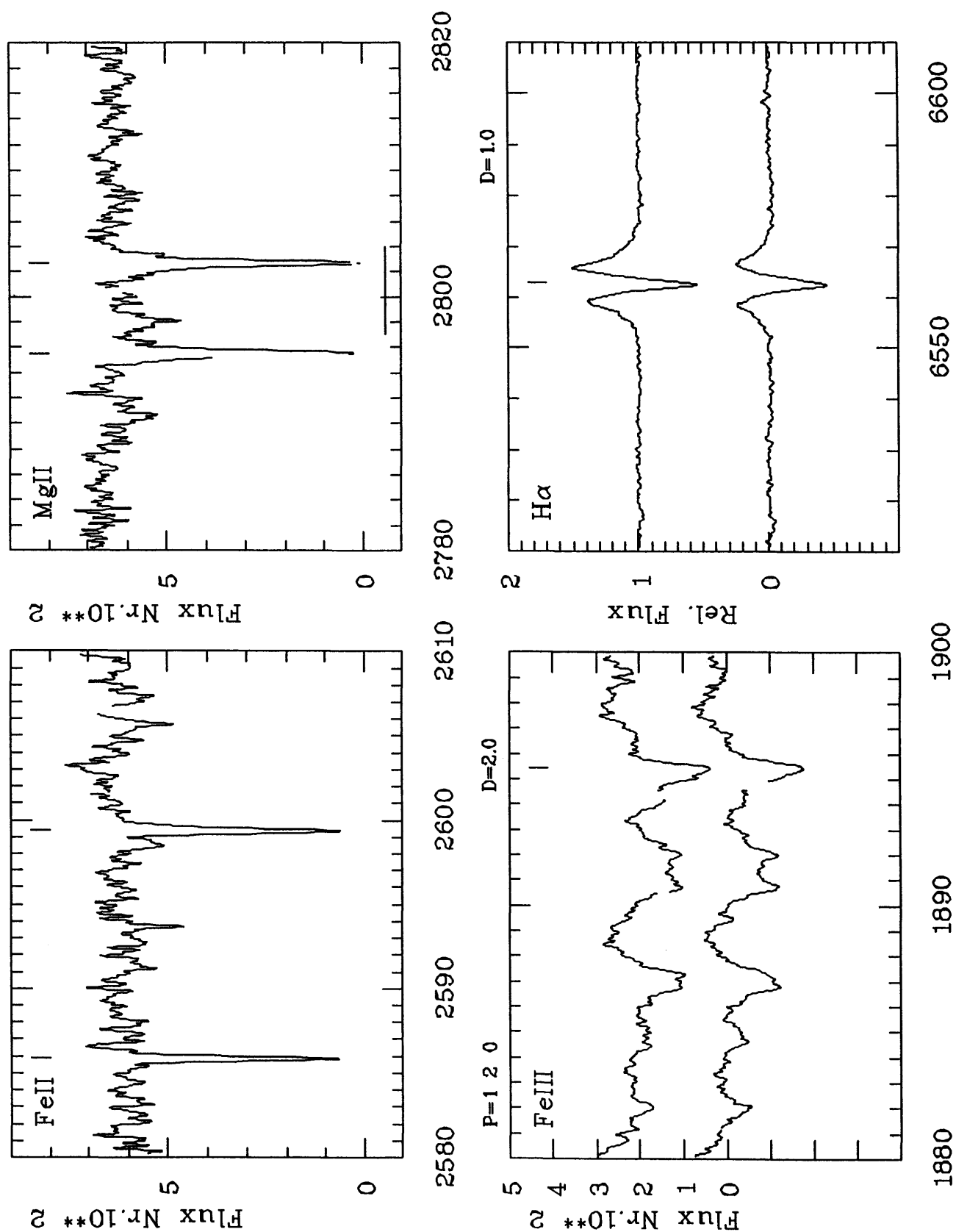
ESO R G8718

77.08.29 - ESO R G13790

88.10.2

HD 205637 B3IIIe

vsini 250



IUE 3 21687 L 83.12.04 - 3 28216 L 86.04.22

IUE 1 05752 L 85.04.14

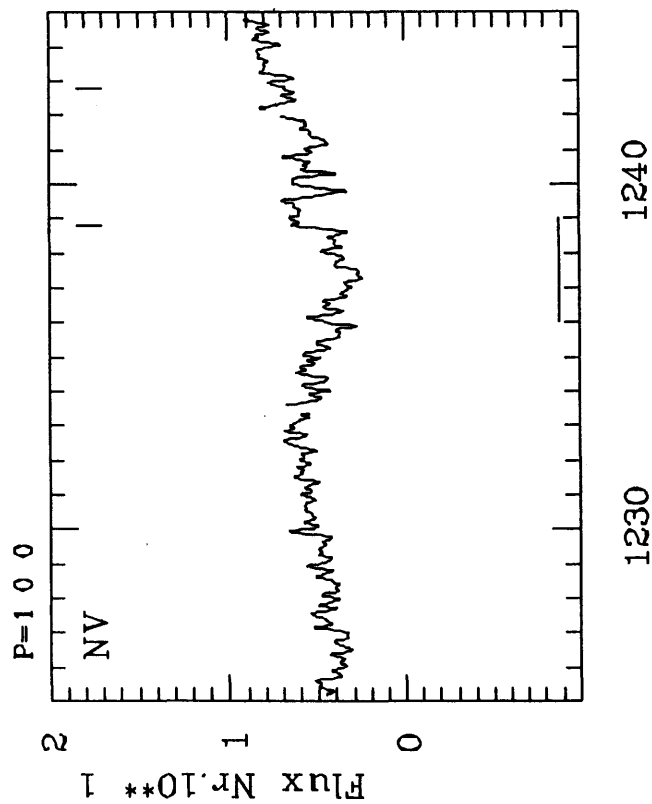
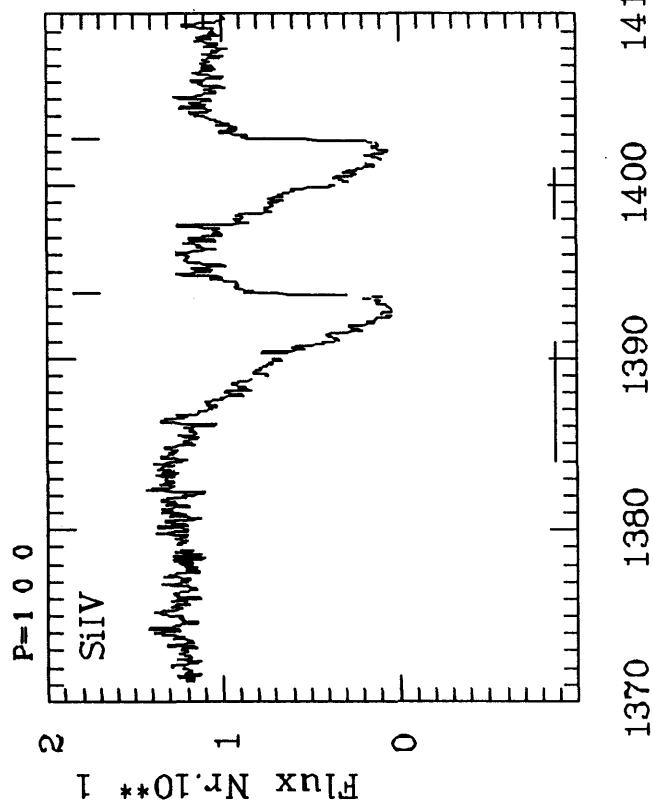
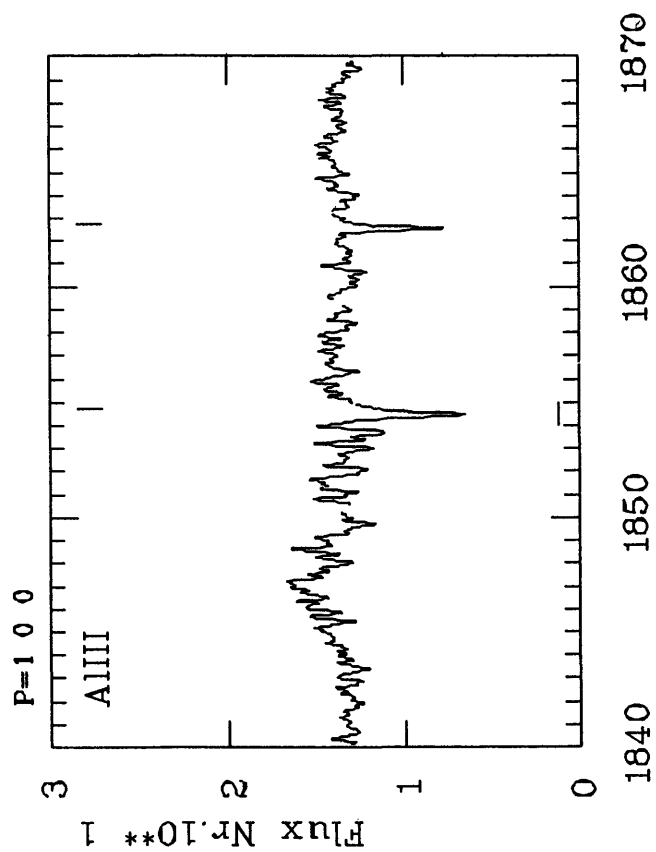
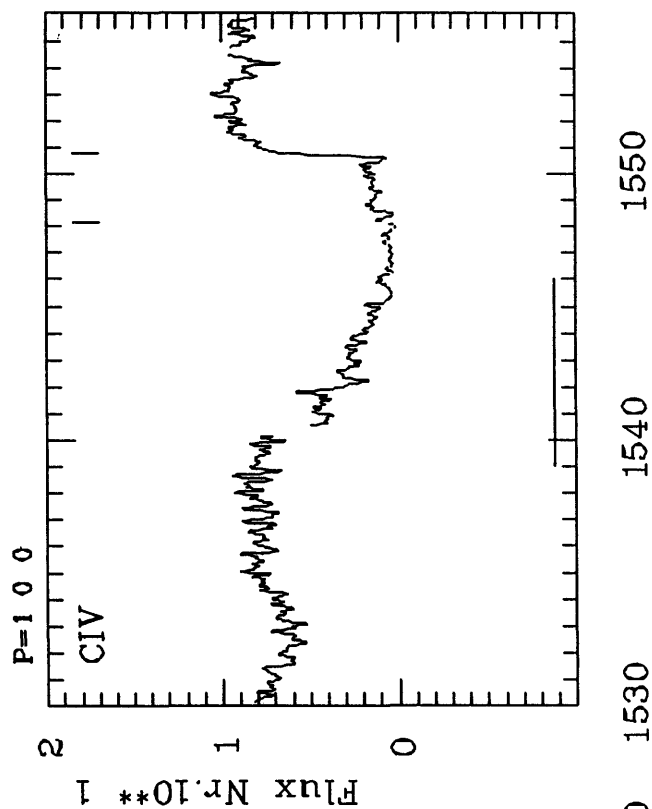
ESO R G8718

77.08.29 - ESO R G13790

88.10.2

HD 206773 B0V_{pe}

vsini 480



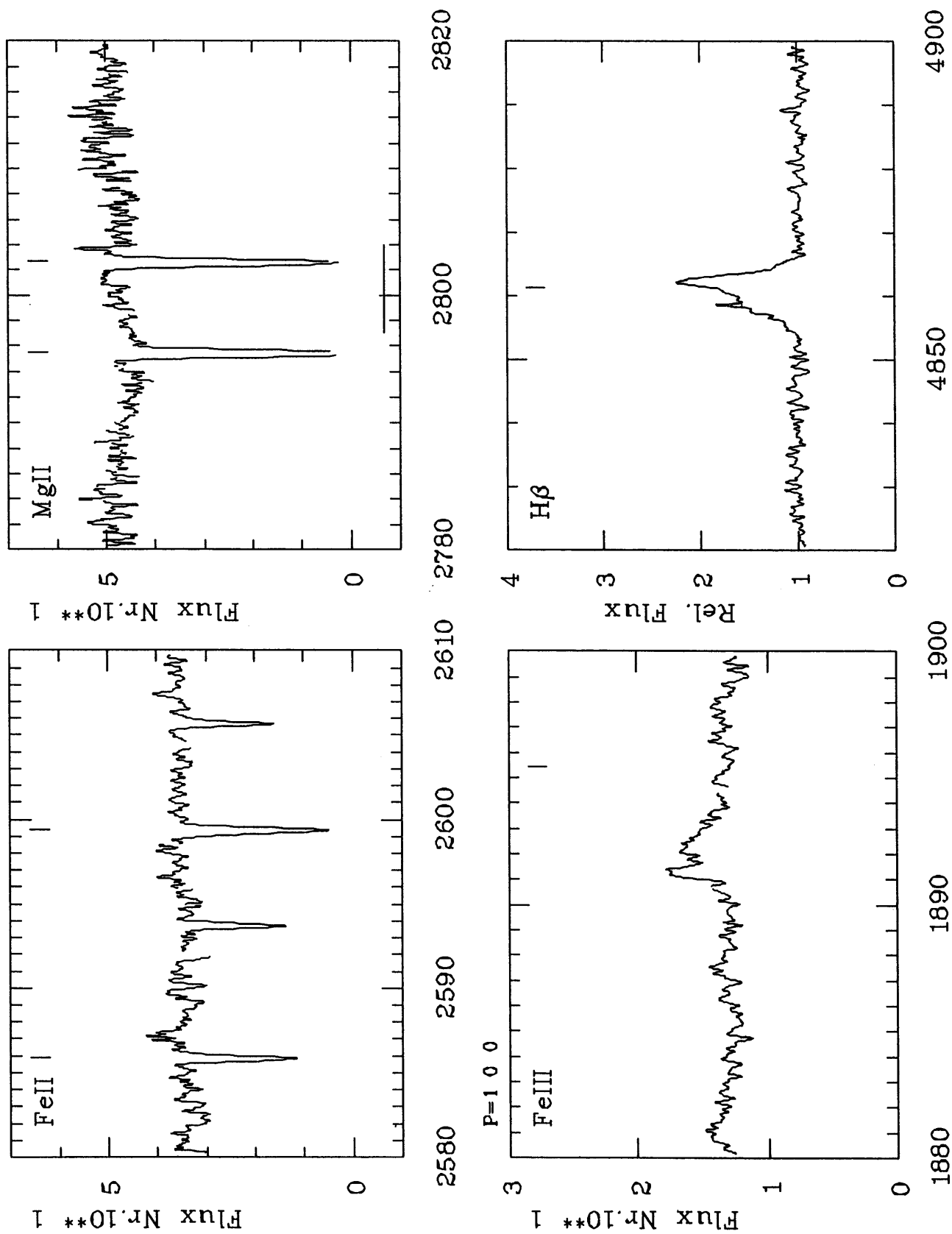
IUE 3 18753 L 82.12.08

IUE 2 14808 L 82.12.08

OHP B GA3260 77.07.20

HD 206773 B0V_{pe}

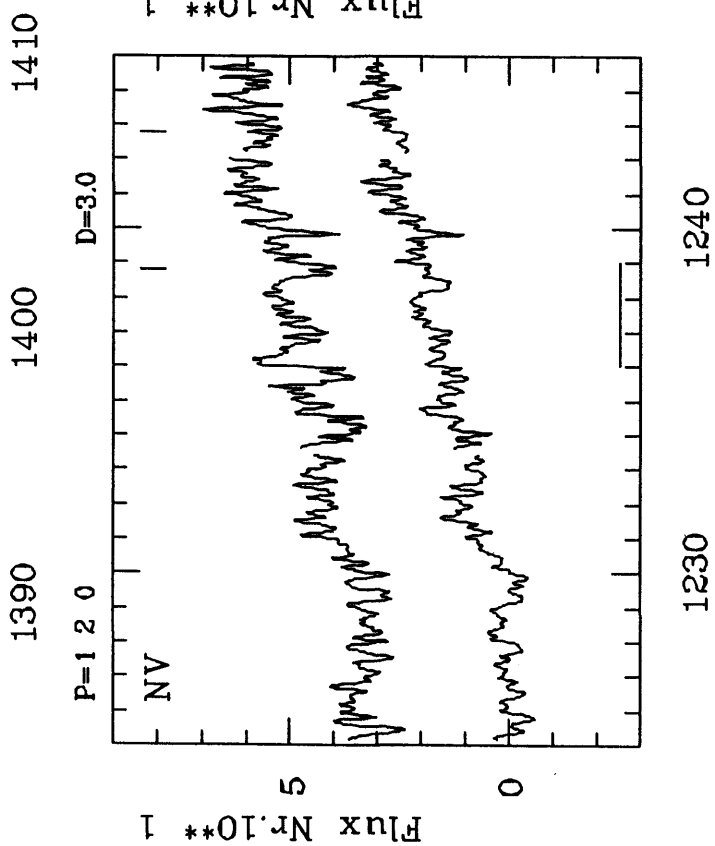
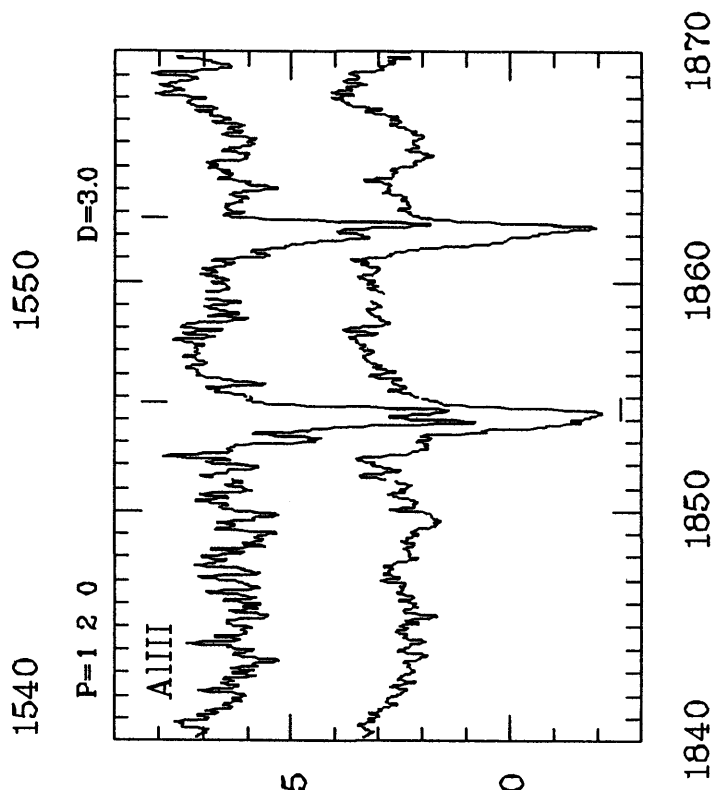
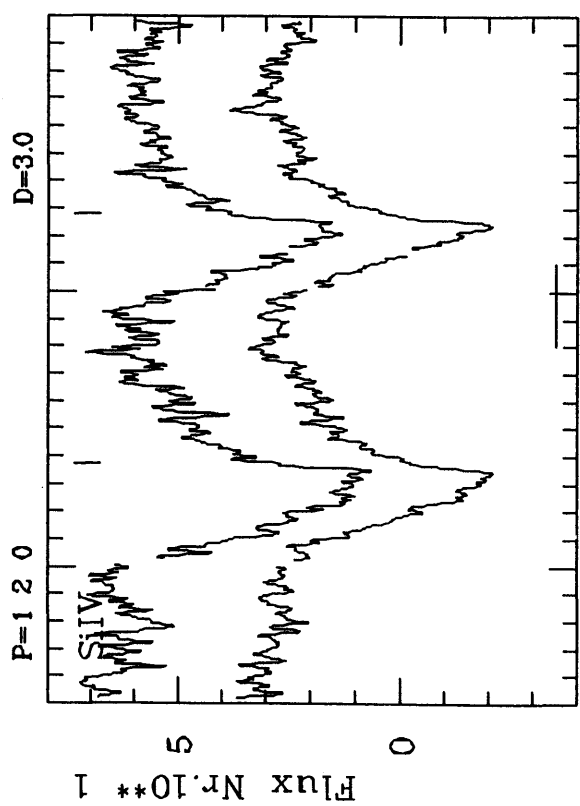
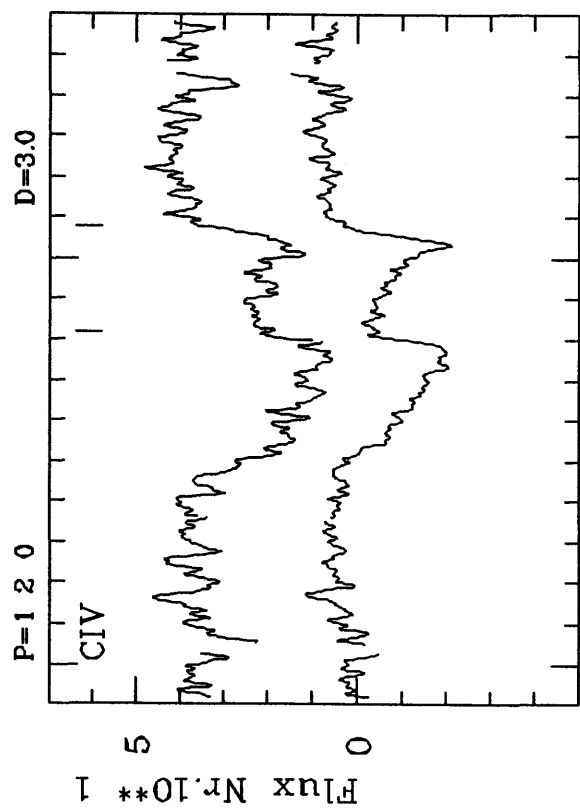
vsini 480



IUE 3 18753 L 82.12.08
 IUE 2 14808 L 82.12.08
 OHP B GA3260 77.07.20

HD 208682 B2Ve

vsini 250

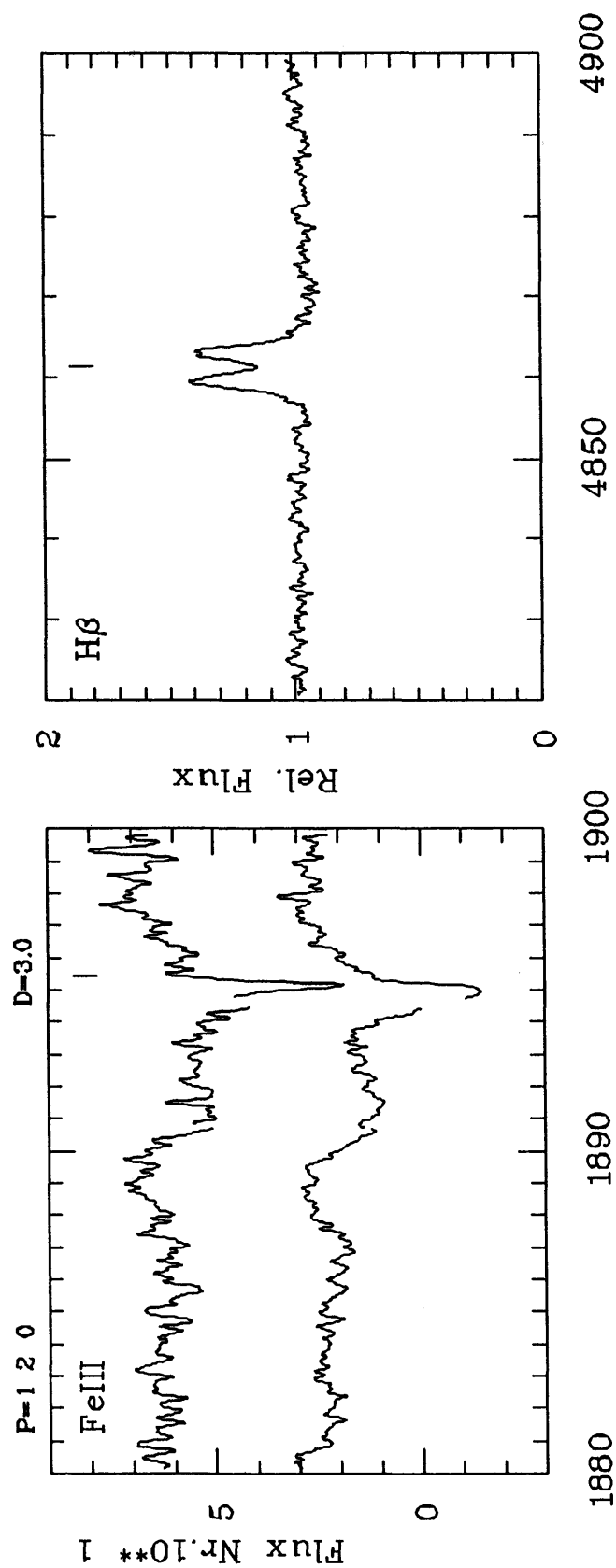


IUE 3 19935 L 83.05.08 - 3 29403 L 86.10.08

OHP B GB2522 73.07.25

HD 208682 B2Ve

vsini 250

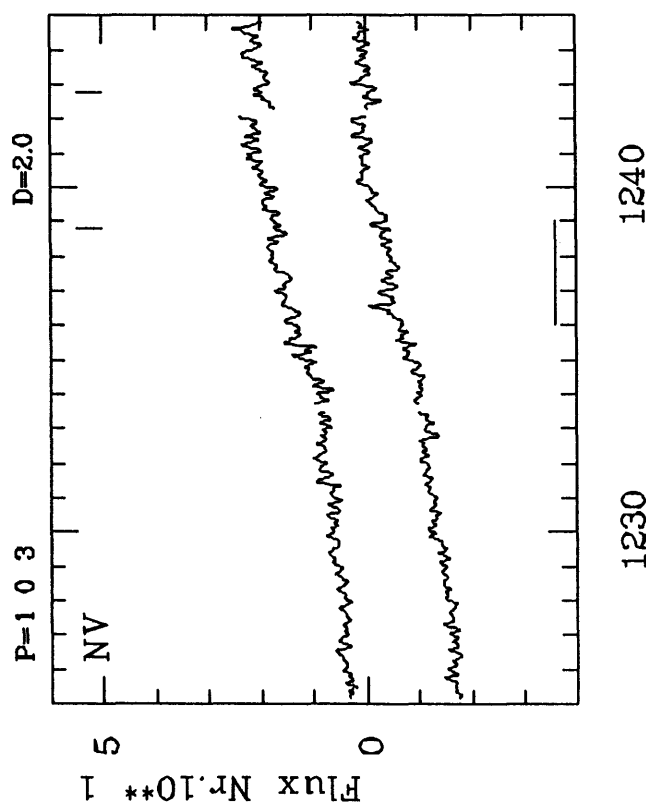
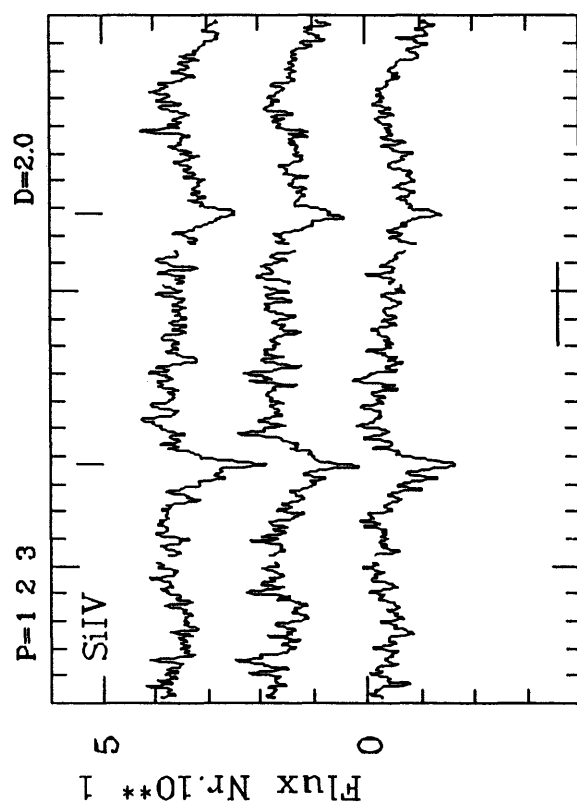
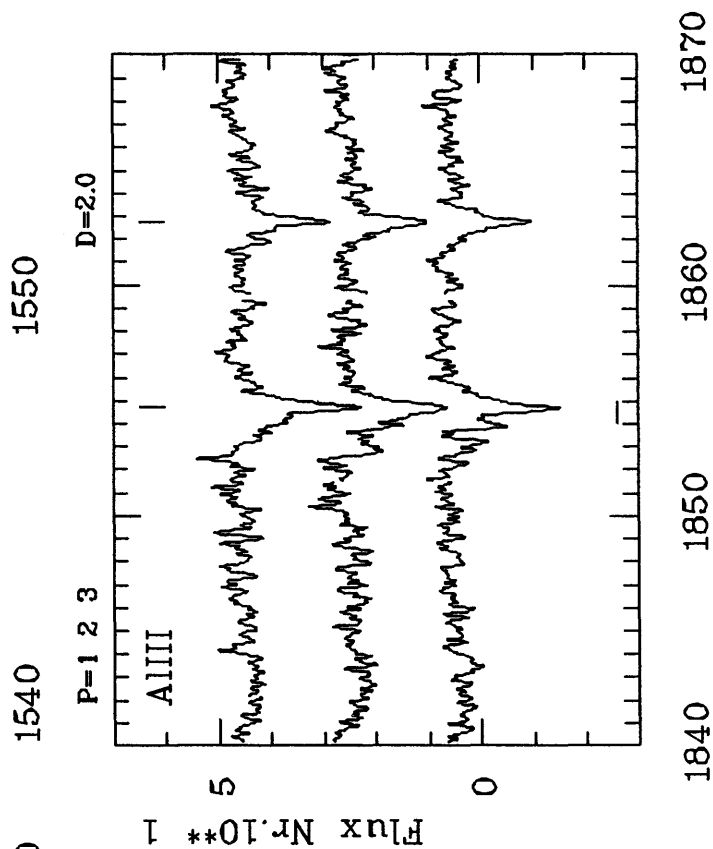
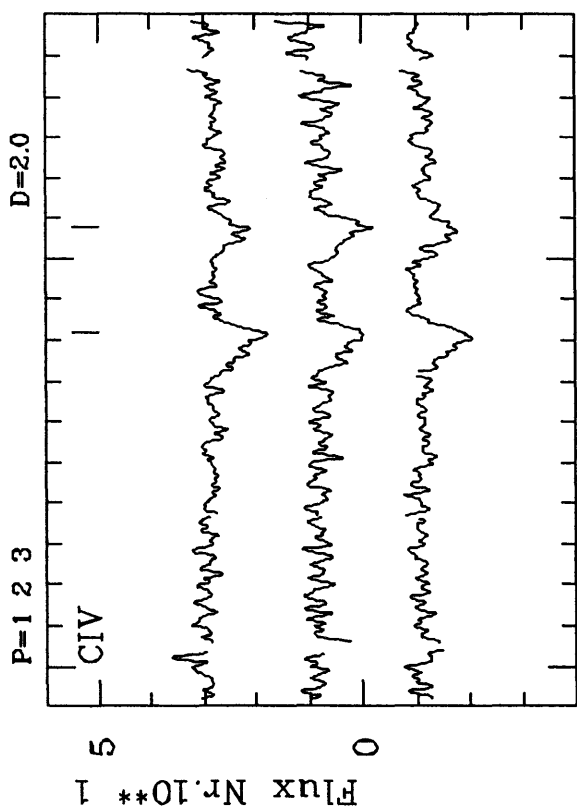


IUE 3 19935 L 83.05.08 - 3 29403 L 86.10.08

OHP B GB2522 73.07.25

HD 209014 B7IVe

vsini 350



IUE 3 25782 L 85.04.26 - 3 26183 L 85.06.16 - 3 31219 L 87.06.20

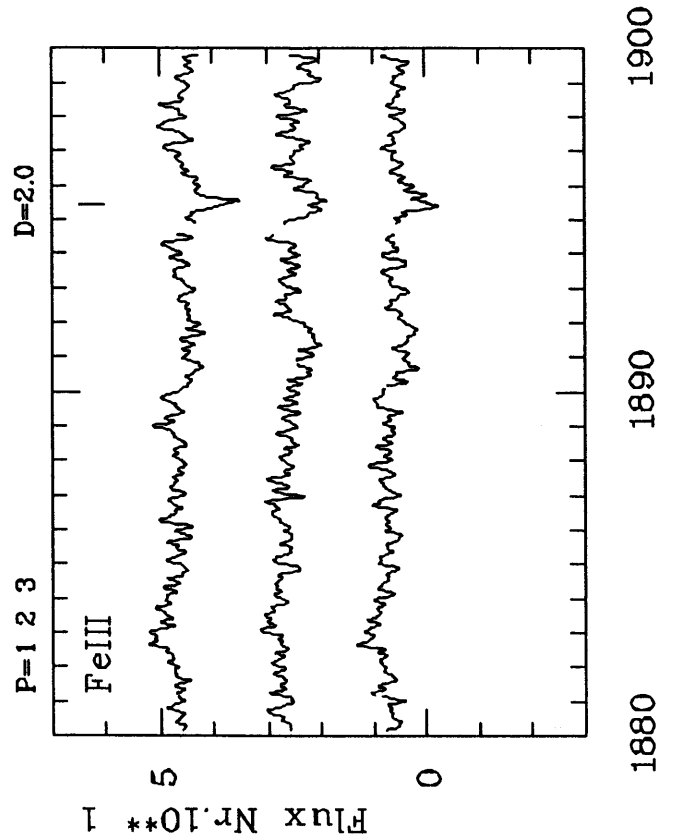
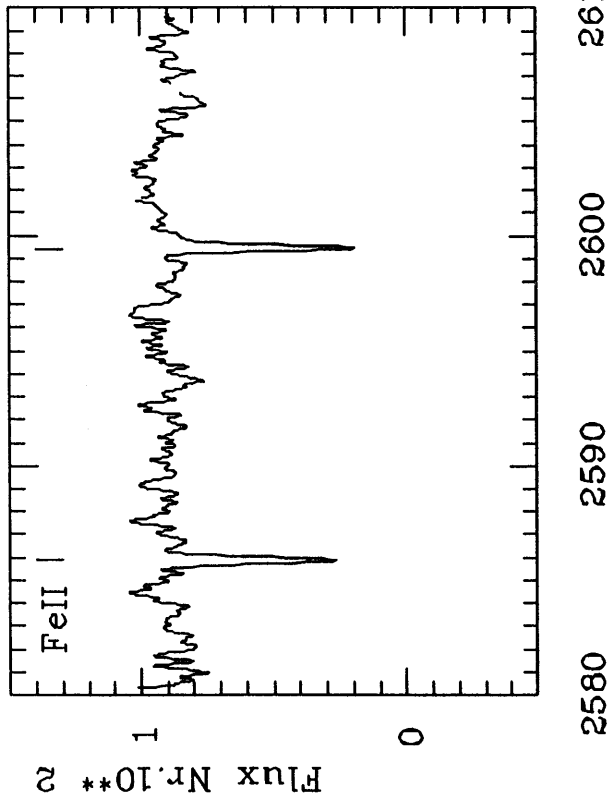
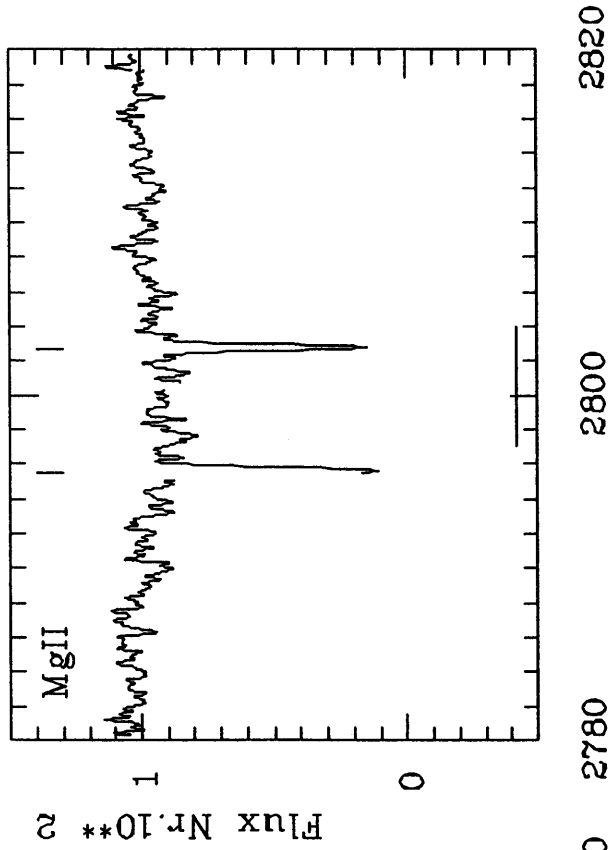
IUE 1 05832 L 85.04.26

OHP B G7929 76.09.14

ESO R F9270 88.10.24

HD 209014 B7IVe

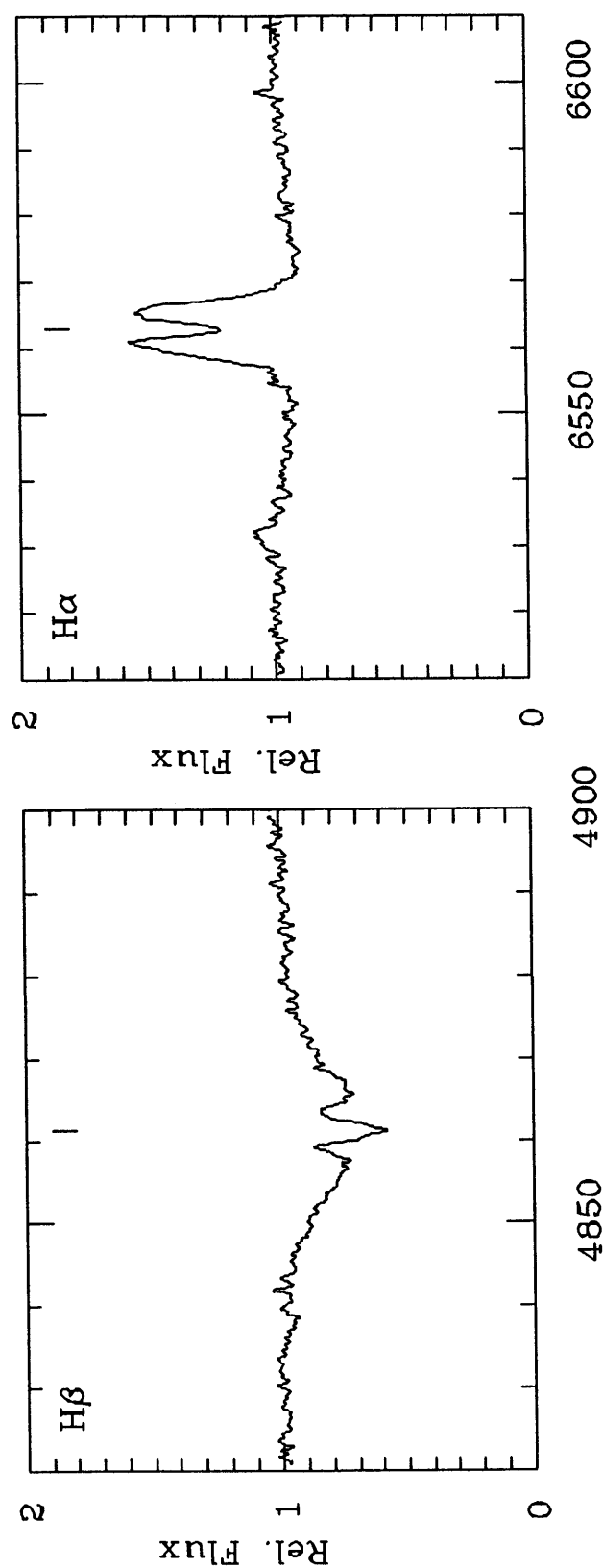
vsini 350



IUE 3 25782 L 85.04.26 - 3 26183 L 85.06.16 - 3 31219 L 87.06.20
 IUE 1 05832 L 85.04.26
 OHP B G7929 76.09.14
 ESO R F9270 88.10.24

HD 209014 B7IVe

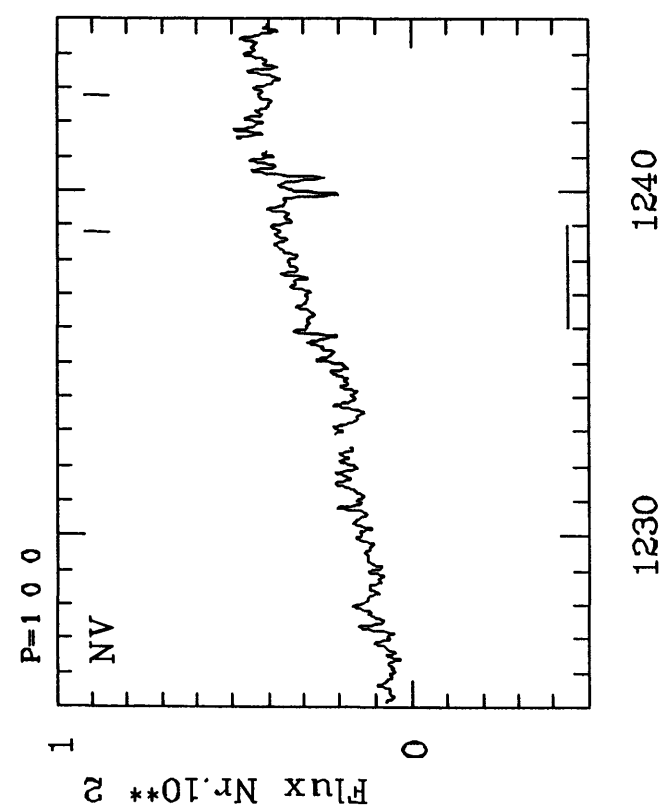
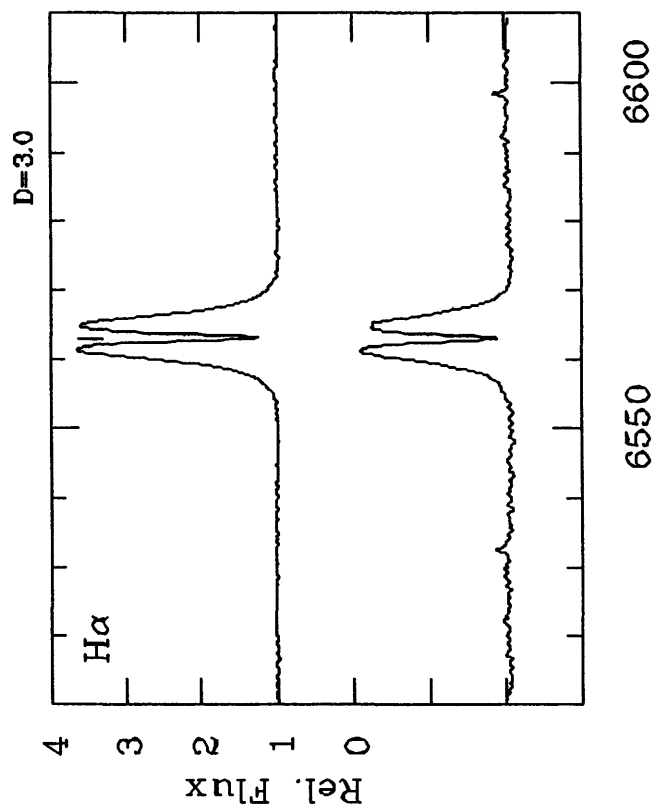
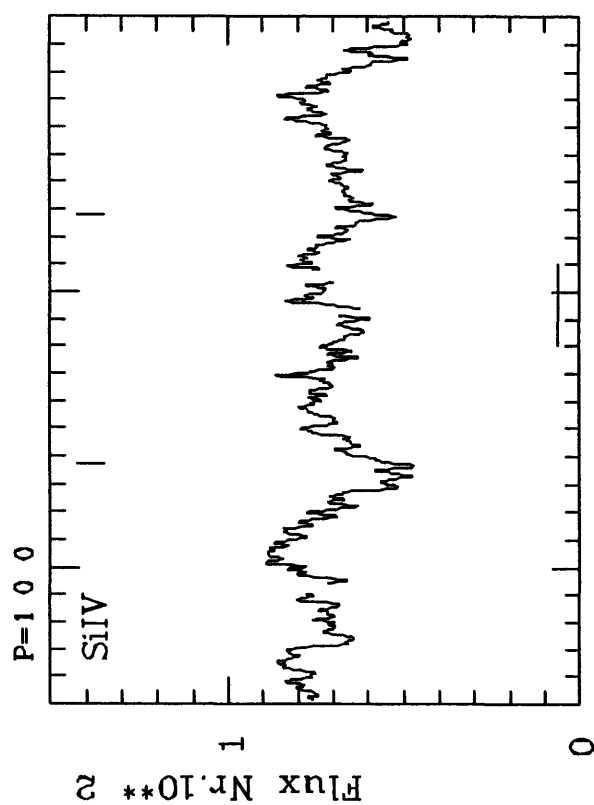
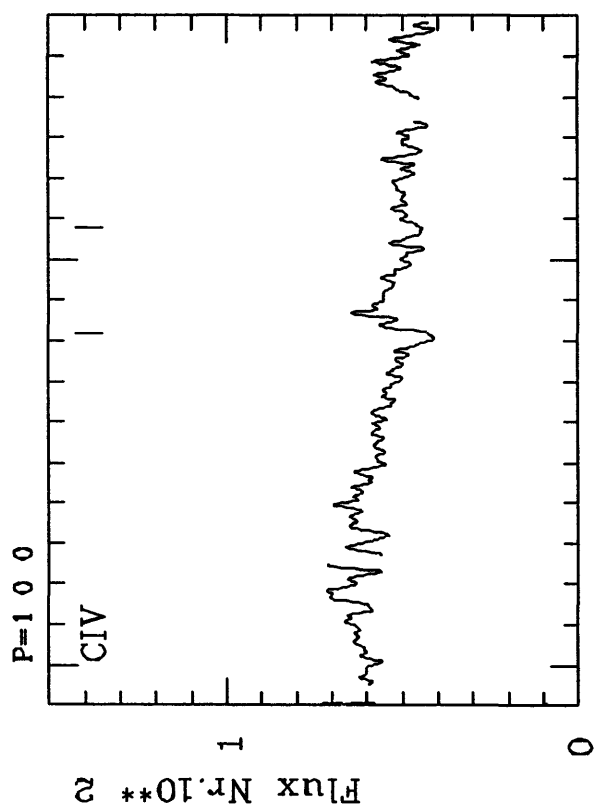
vsini 350



IVE 3 25782 L 85.04.26 - 3 26183 L 85.06.16 - 3 31219 L 87.06.20
 IVE 1 05832 L 85.04.26
 OHP B G7929 76.09.14
 ESO R F9270 88.10.24

HD 209409 B7IIIesh

vsini 300



IUE 3 05912 S 79.07.23

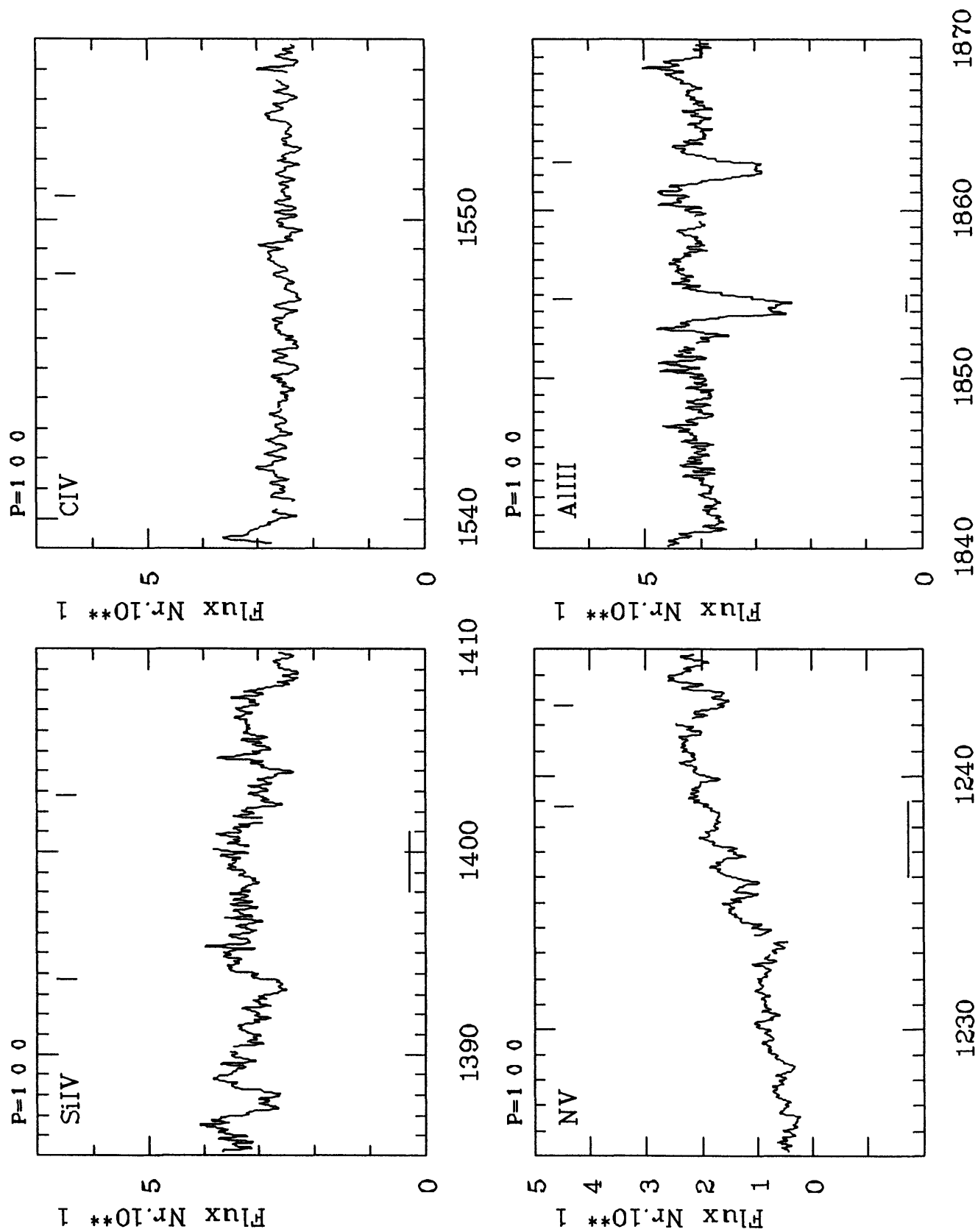
ESO R G8746

77.08.31 - ESO R G13805

88.10.2

HD 210129 B6Ve

vsini 150



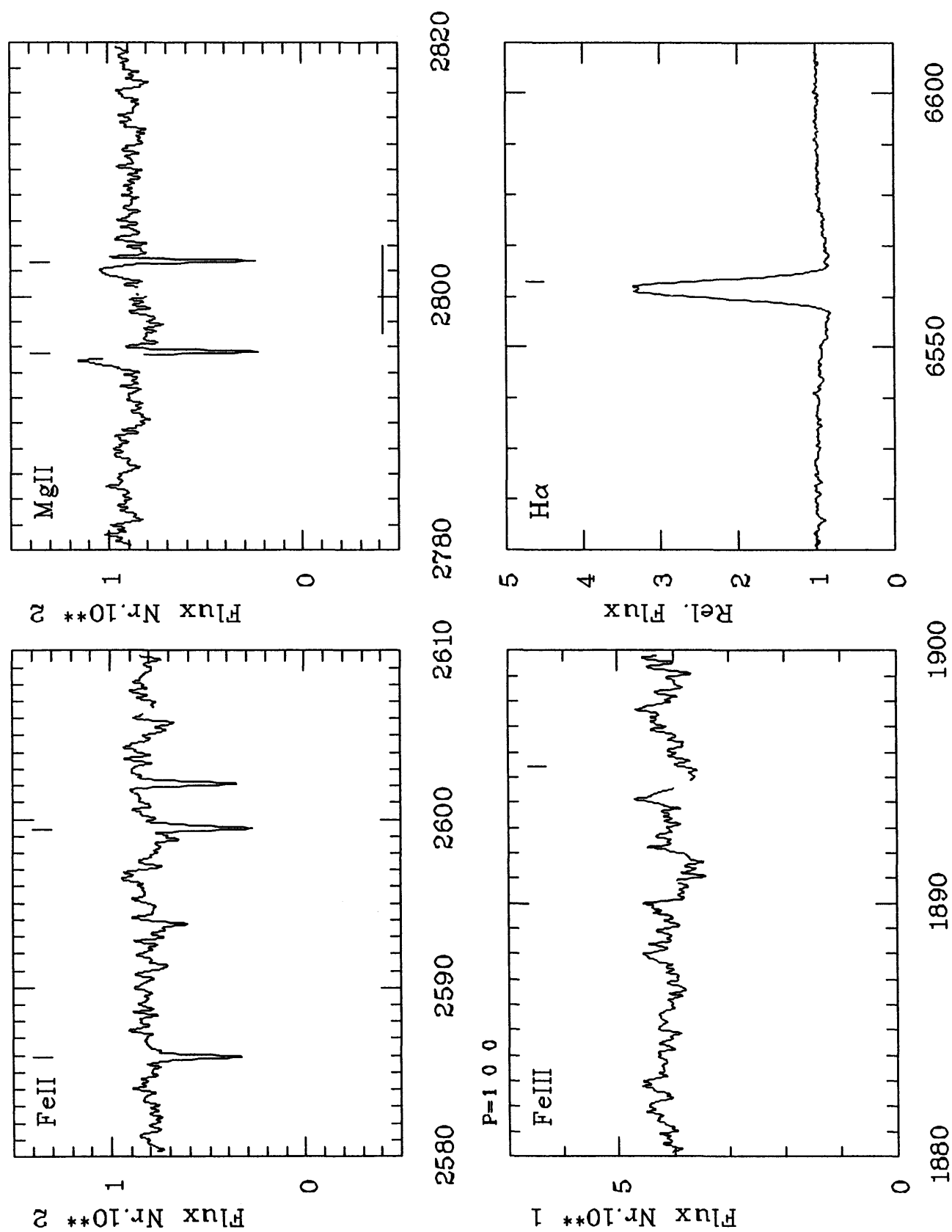
IUE 3 25955 L 85.05.16

IUE 1 05991 L 85.05.16

OHP R GA8381 88.11.27

HD 210129 B6Ve

vsini 150



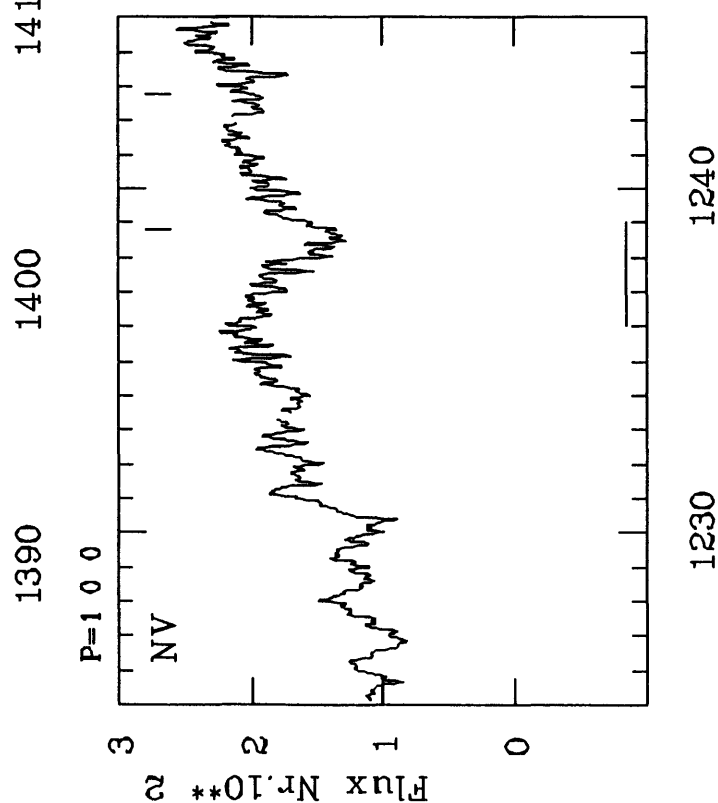
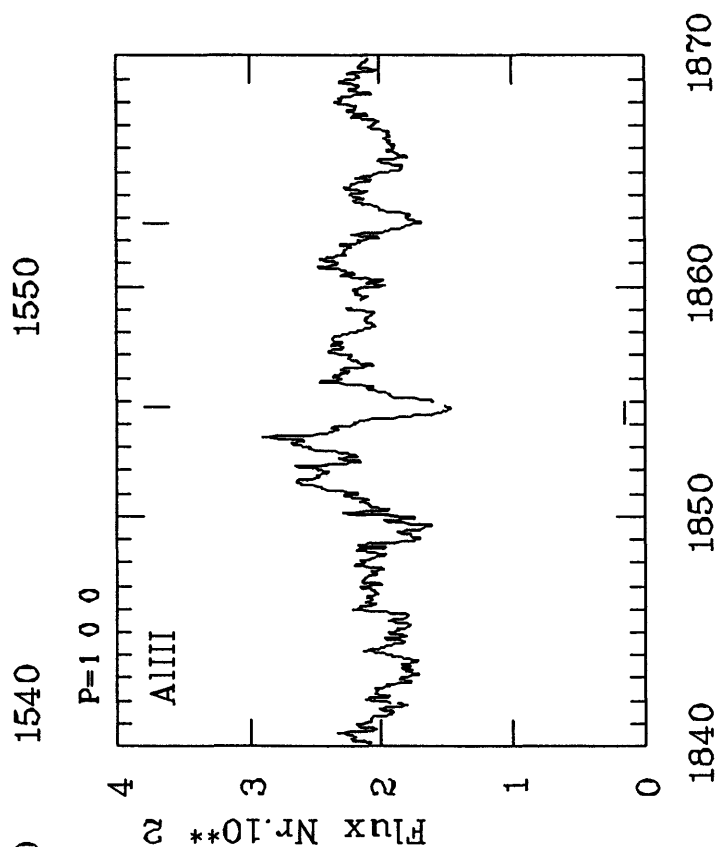
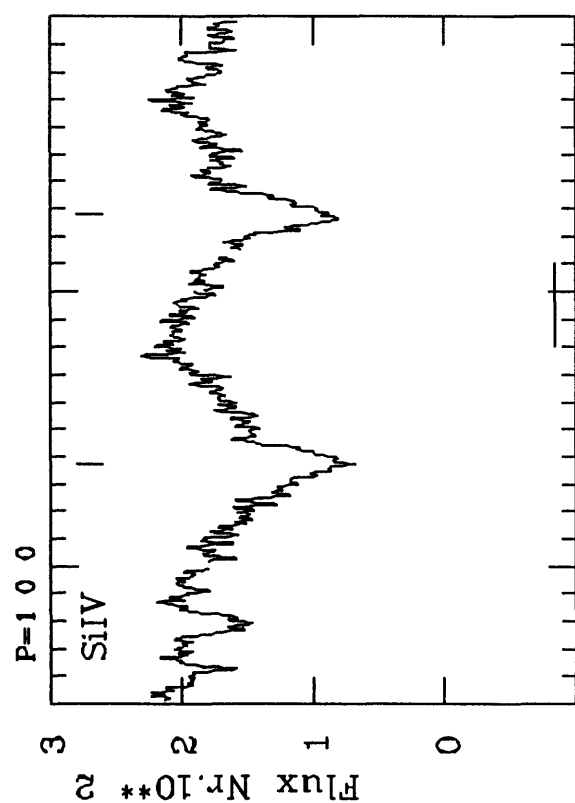
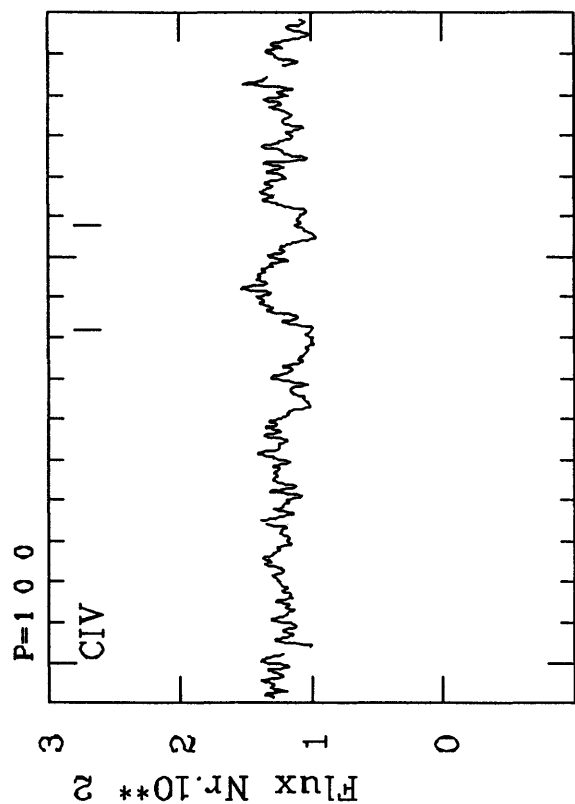
IUE 3 25955 L 85.05.16

IUE 1 05991 L 85.05.16

OHP R GA8381 88.11.27

HD 212076 B1.5Ve

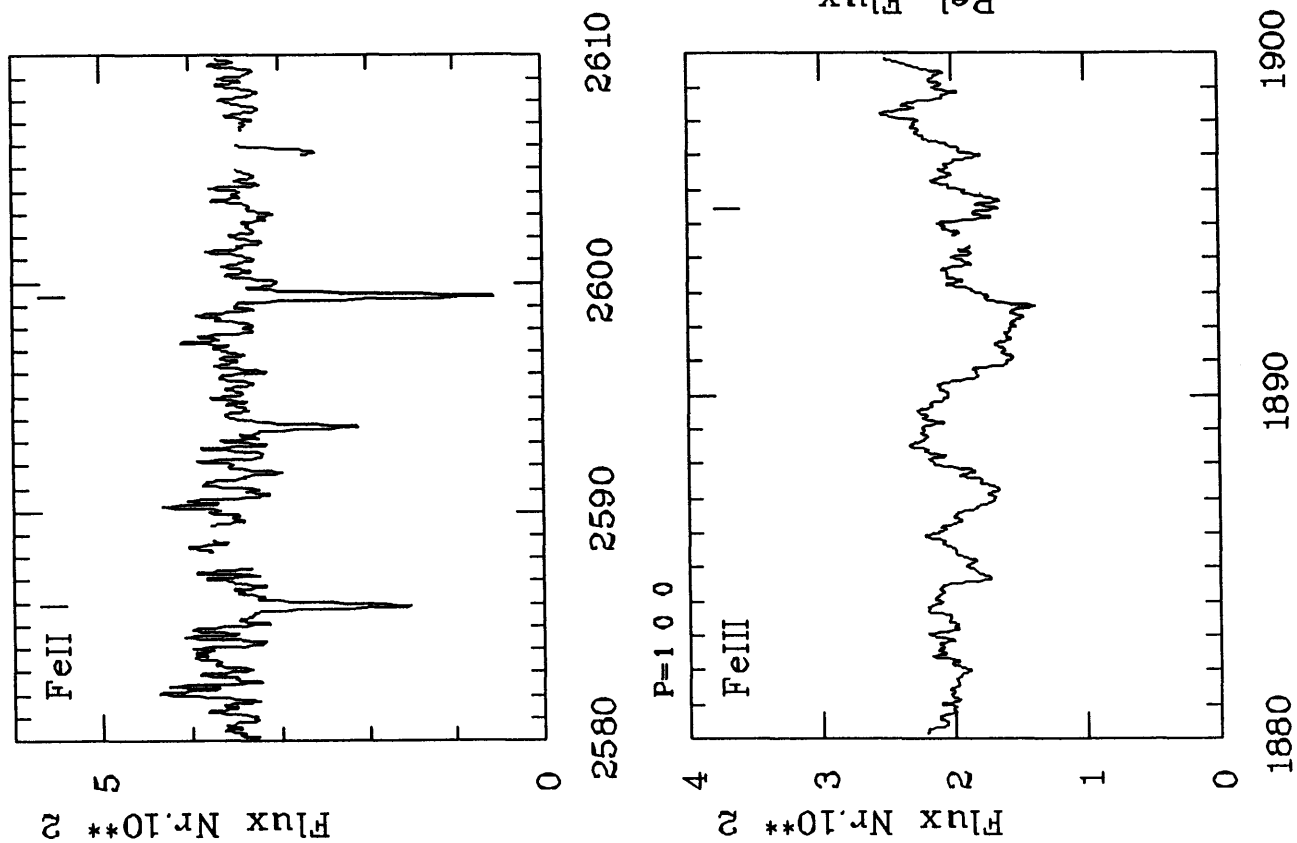
vsini 100



IUE 3 15934 L 82.01.03
 IUE 2 03406 S 79.01.06
 OHP B GB2606 73.10.17

HD 212076 B1.5Ve

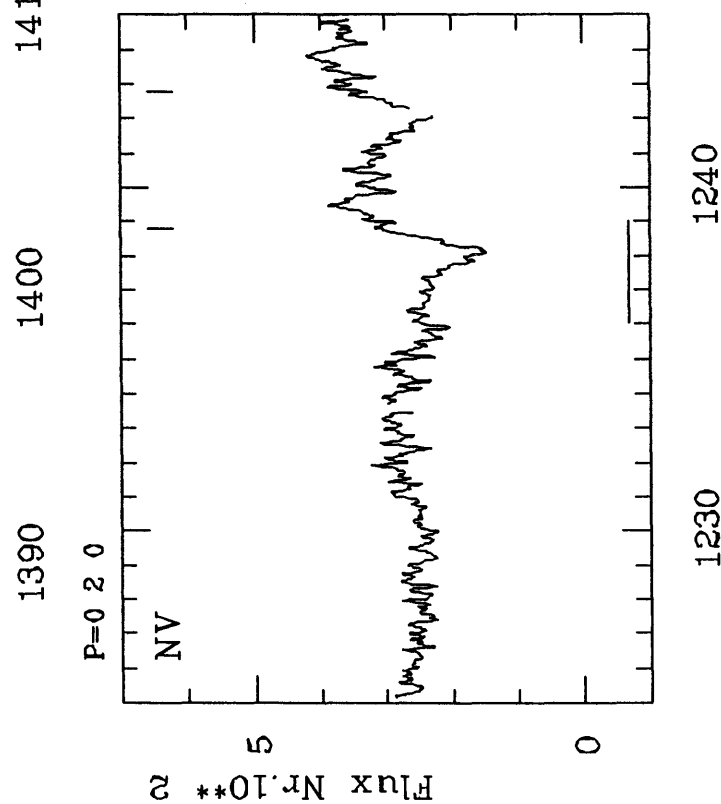
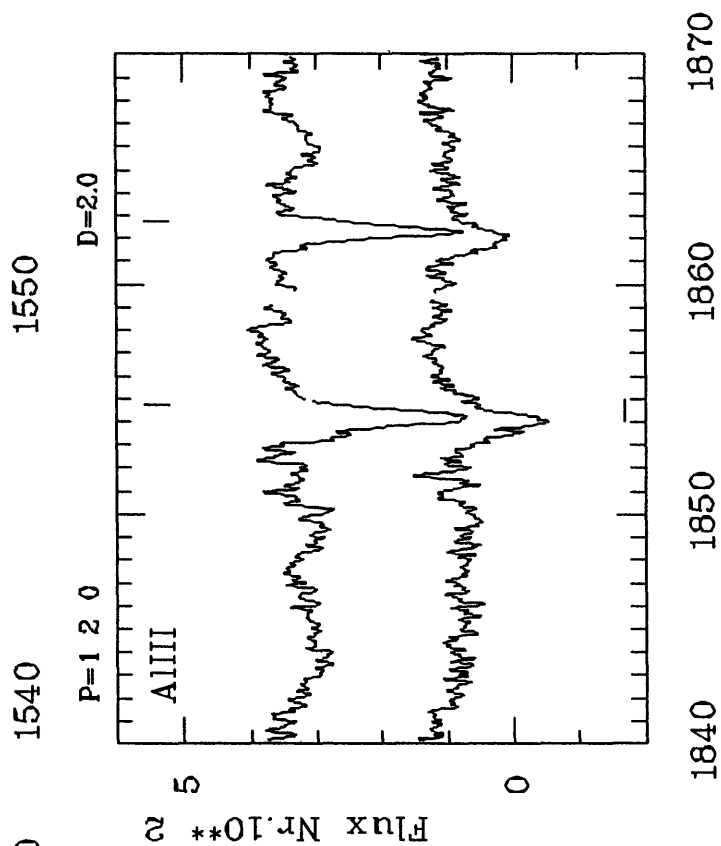
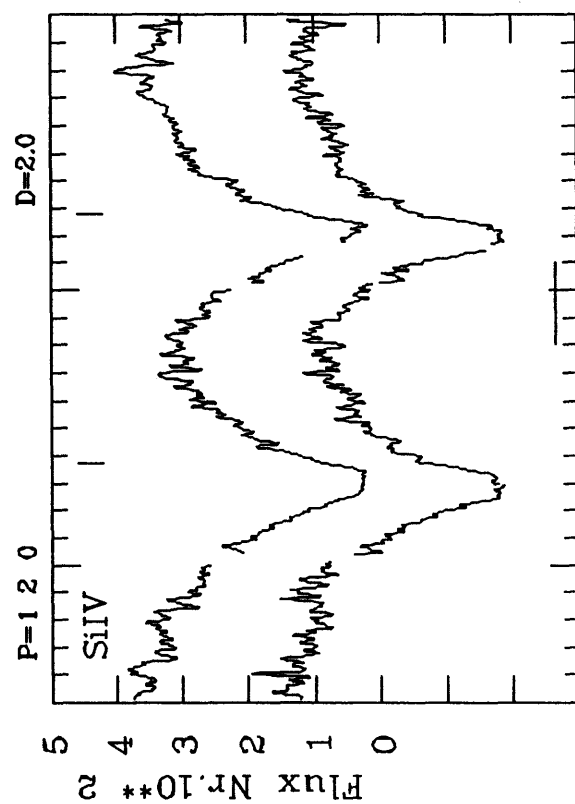
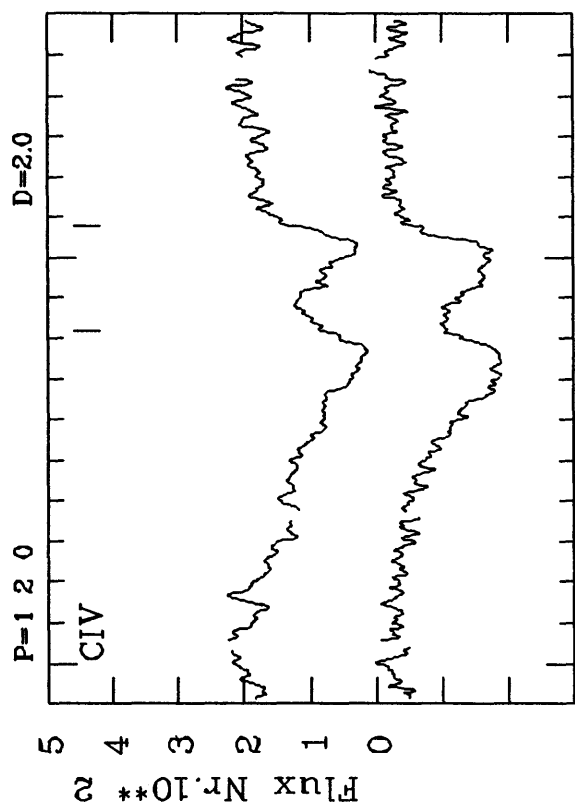
vsini 100



IUE 3 15934 L 82.01.03
 IUE 2 03406 S 79.01.06
 OHP B GB2606 73.10.17

HD 212571 B1(III-IV)e

vsini 300



IUE 3 07009 L 79.10.27 - 3 26310 L 85.06.29

IUE 2 05141 L 79.07.21

OHP R GB4697

78.08.14

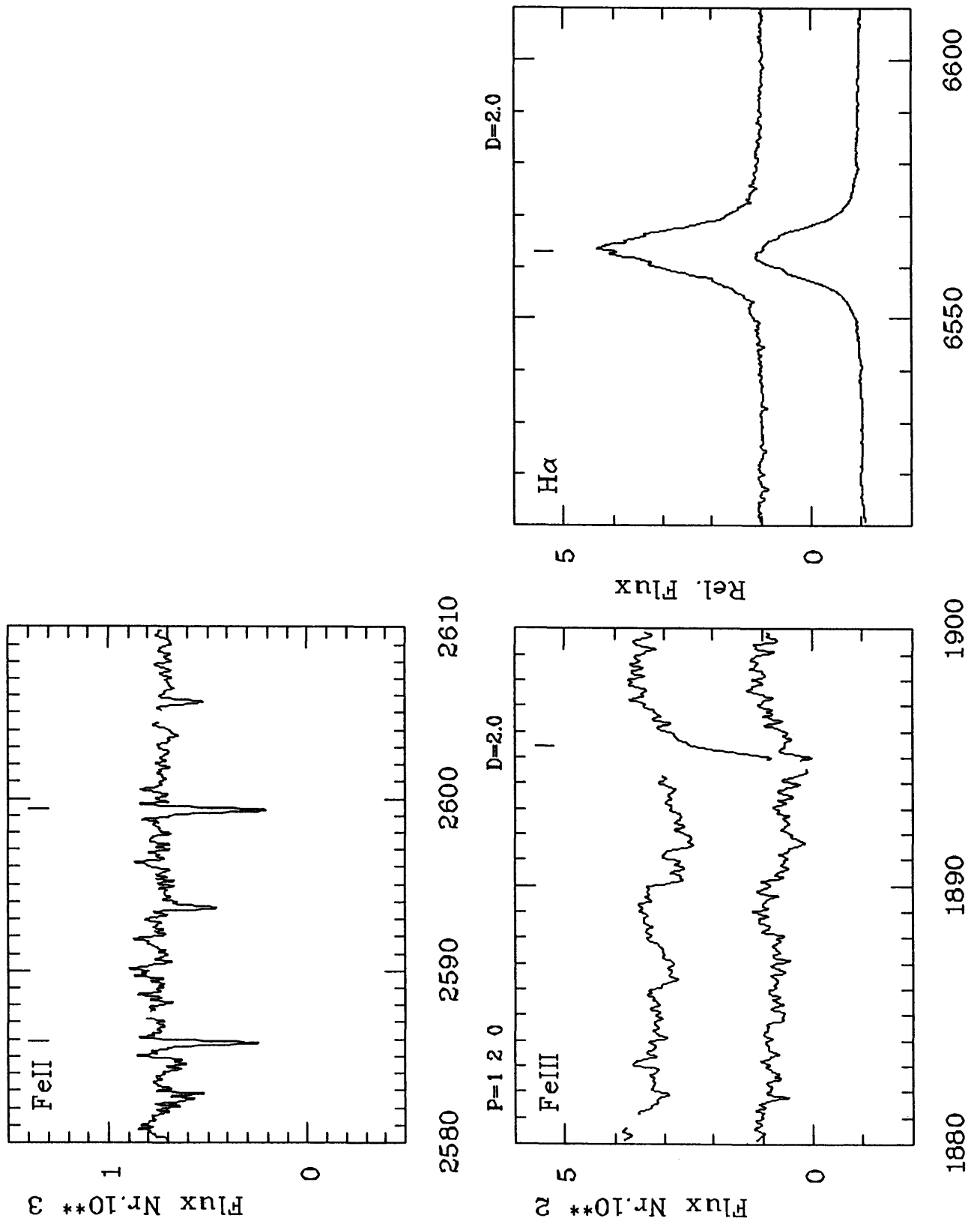
- OHP R

GA8381

88.11.2

HD 212571 B1(III-IV)e

vsini 300



IUE 3 07009 L 79.10.27 - 3 26310 L 85.06.29

IUE 2 05141 L 79.07.21

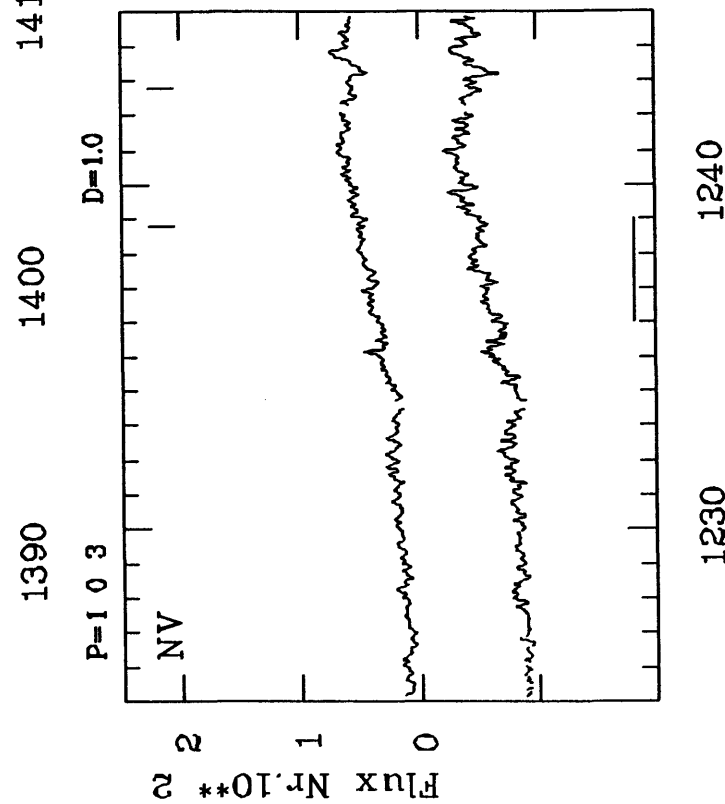
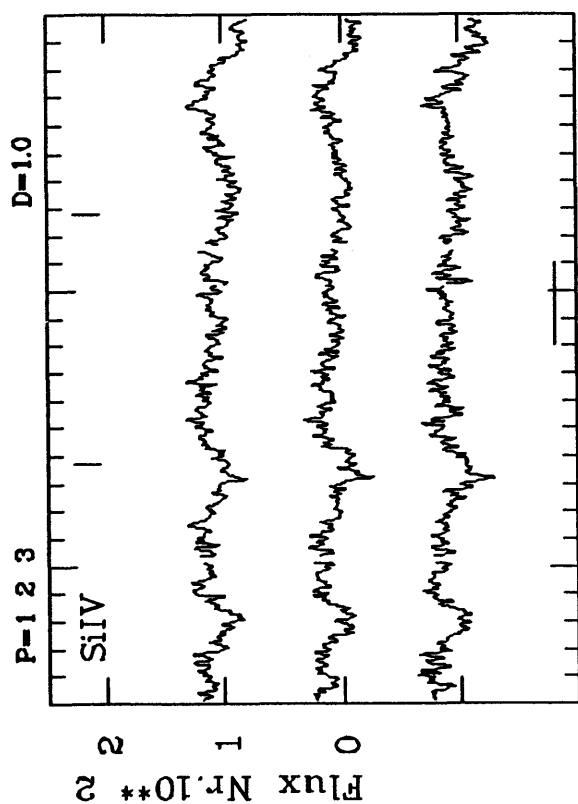
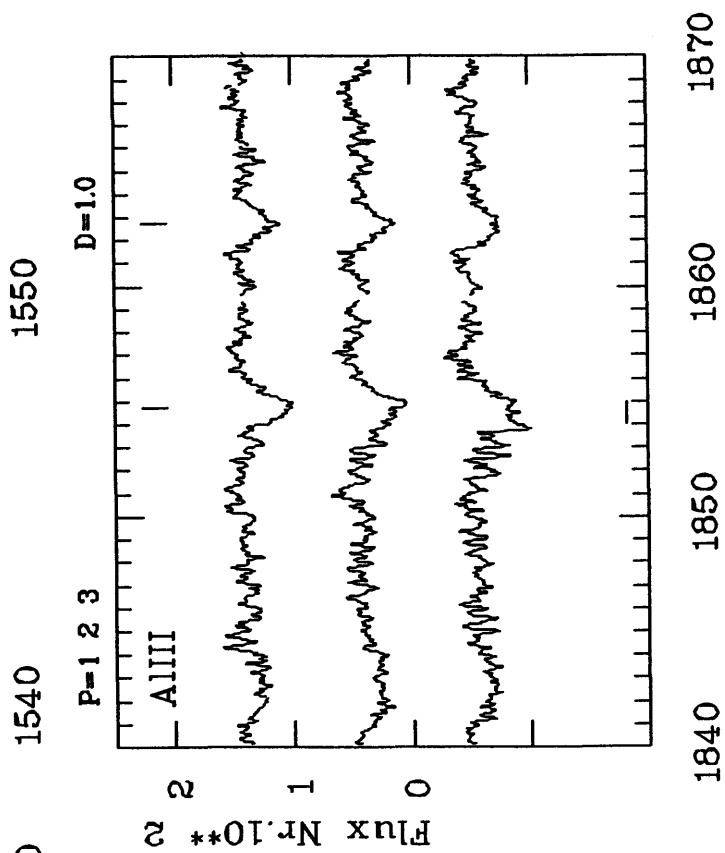
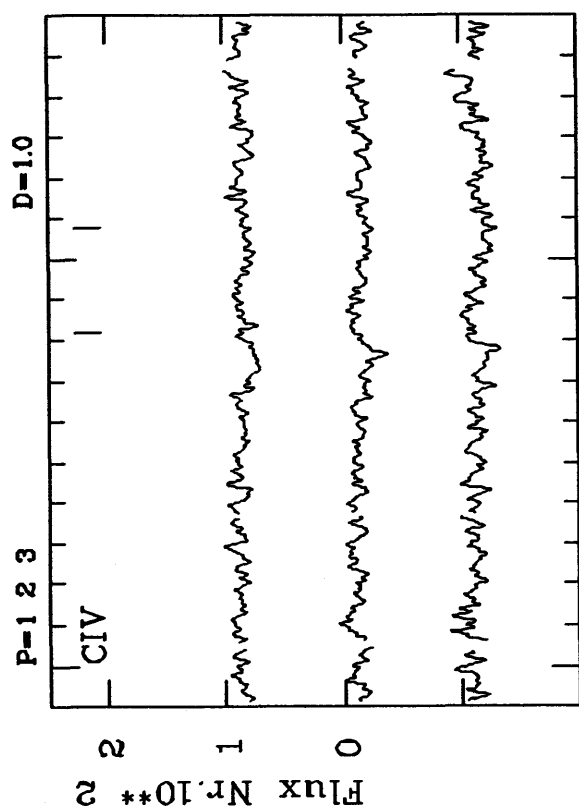
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78.08.14 - OHP R GA8381

88.11.2

HD 214748 B7IVe

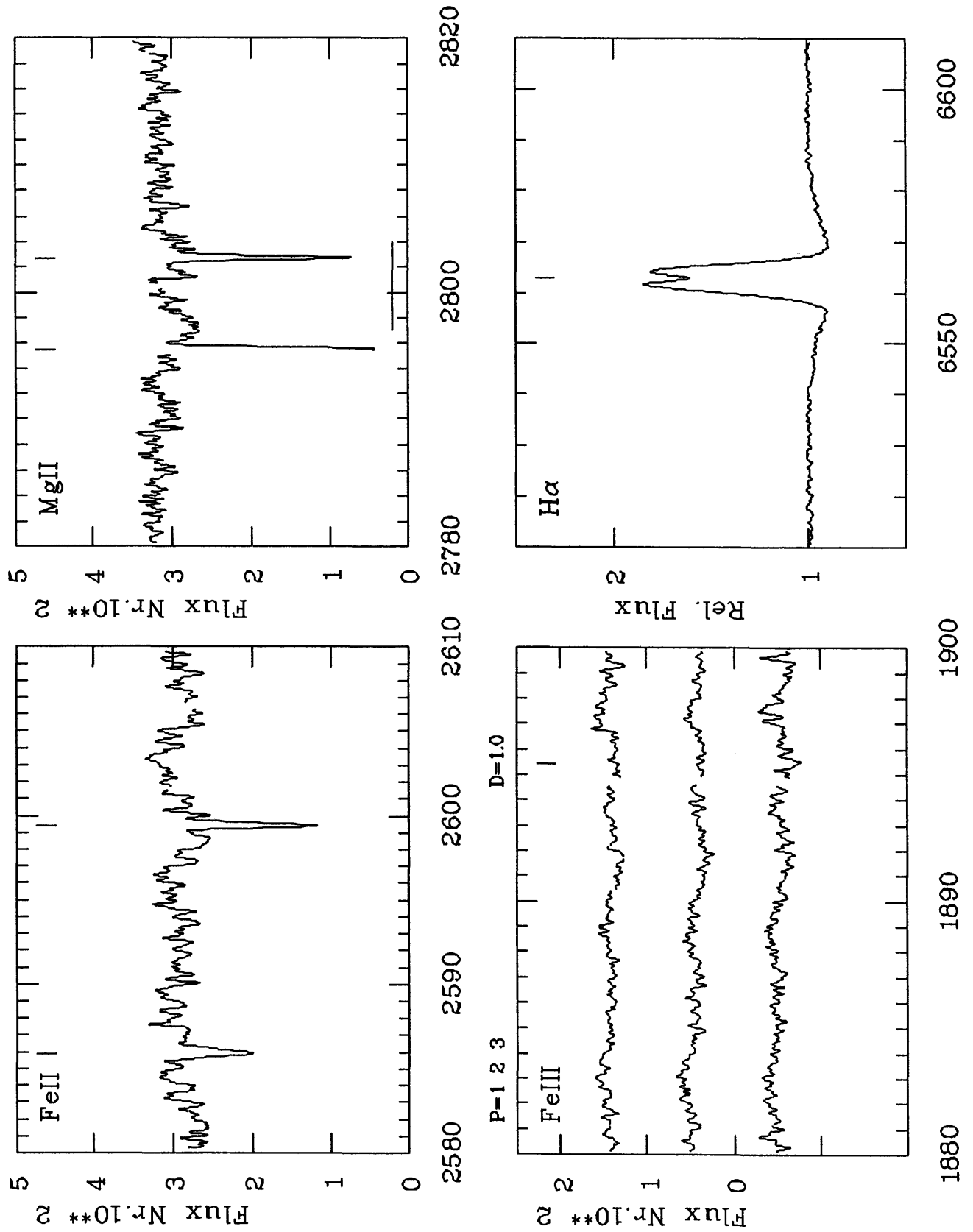
vsini 180



IUE 3 25781 L 85.04.26 - 3 26119 L 85.06.08 - 3 26182 L 85.06.16
 IUE 1 05831 L 85.04.26

HD 214748 B7IVe

vsini 180

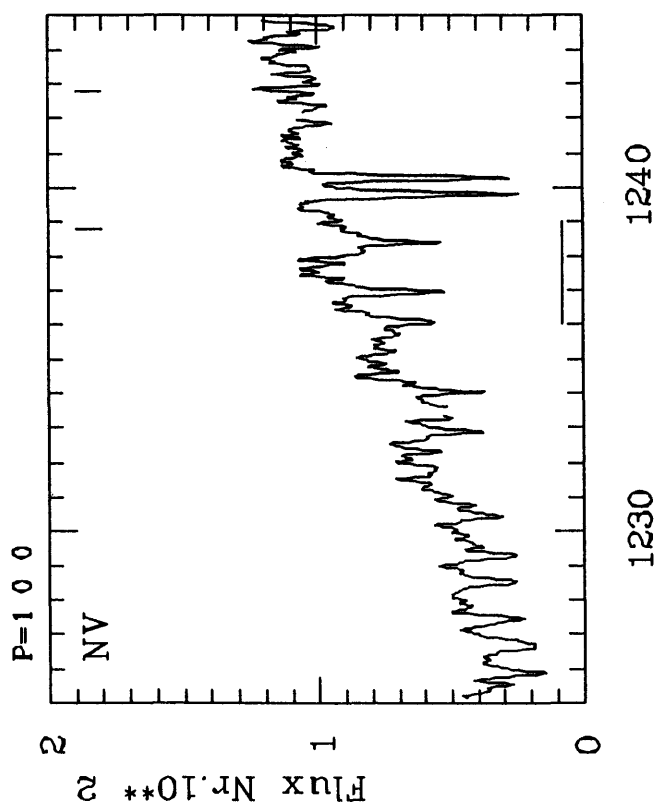
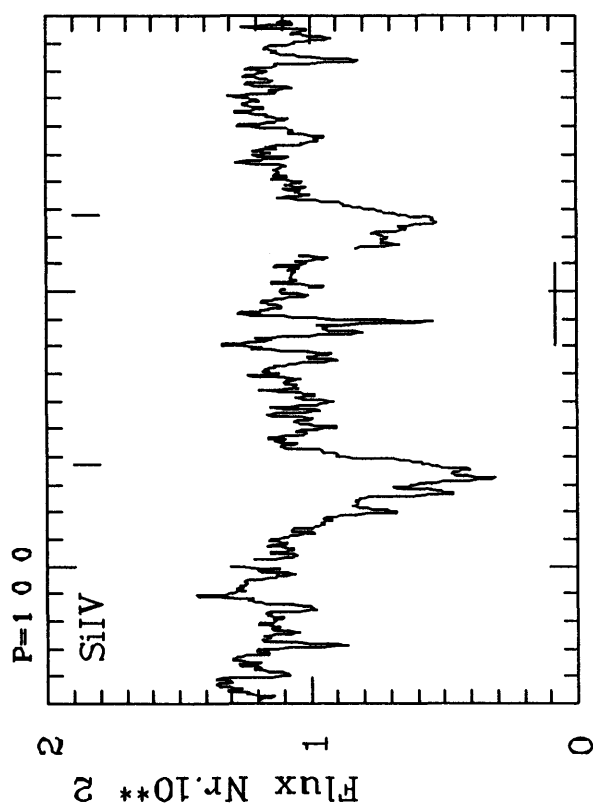
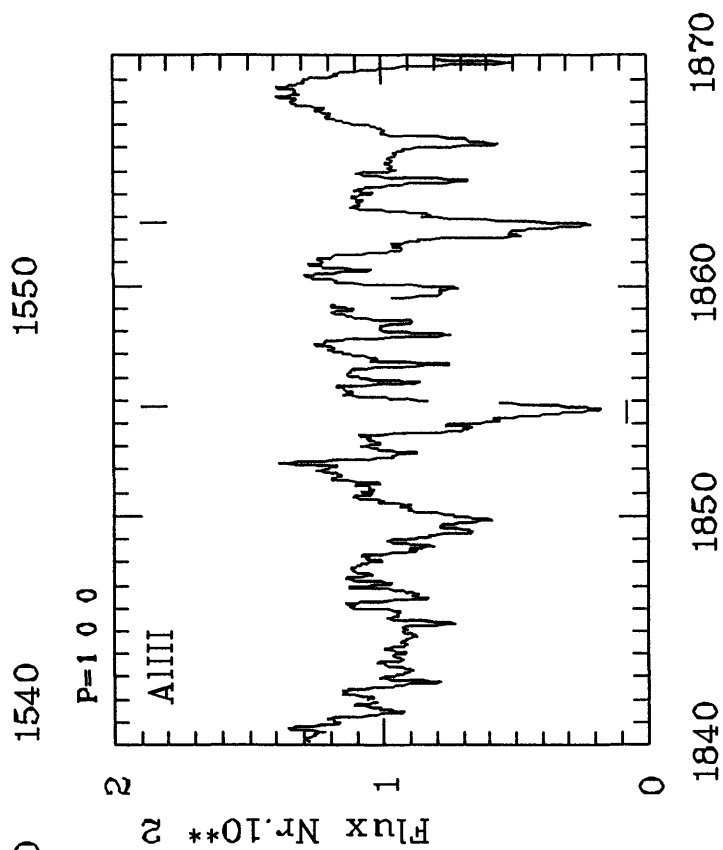
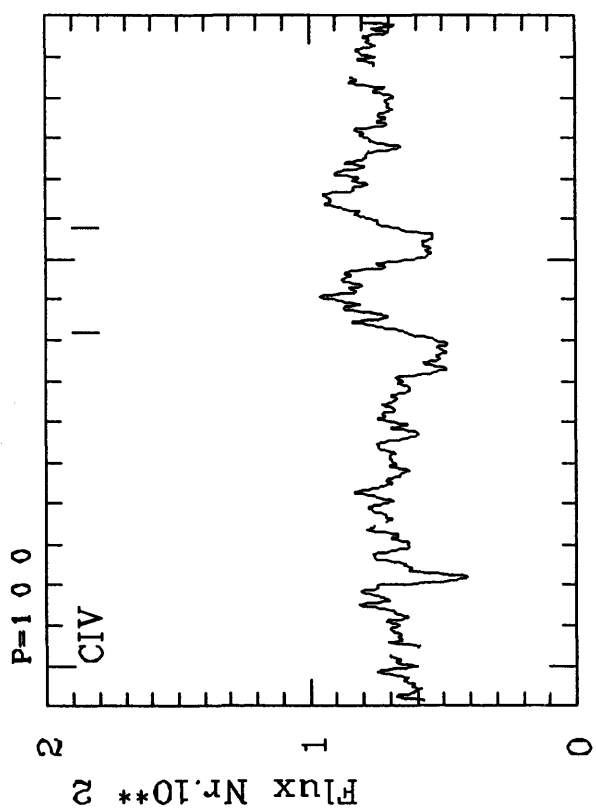


IUE 3 25781 L 85.04.26 - 3 26119 L 85.06.08 - 3 26182 L 85.06.16
 IUE 1 05831 L 85.04.26

ESO R G8767 77.09.04

HD 217050 B3:IV:esh

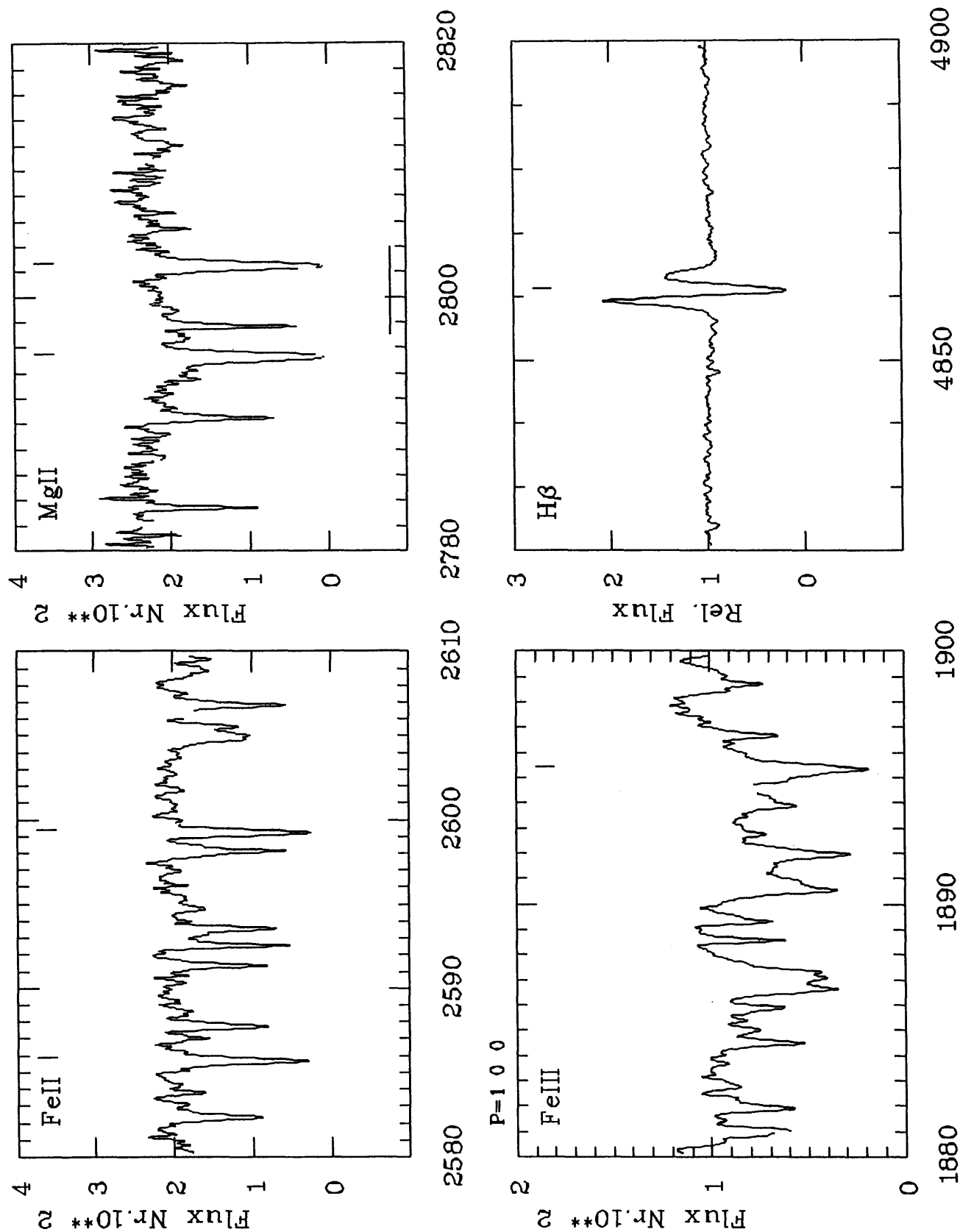
vsini 300



IUE 3 19323 L 83.02.25
 IUE 2 14259 S 82.09.25
 OHP B GB5527 79.01.01

HD 217050 B3:IV:esh

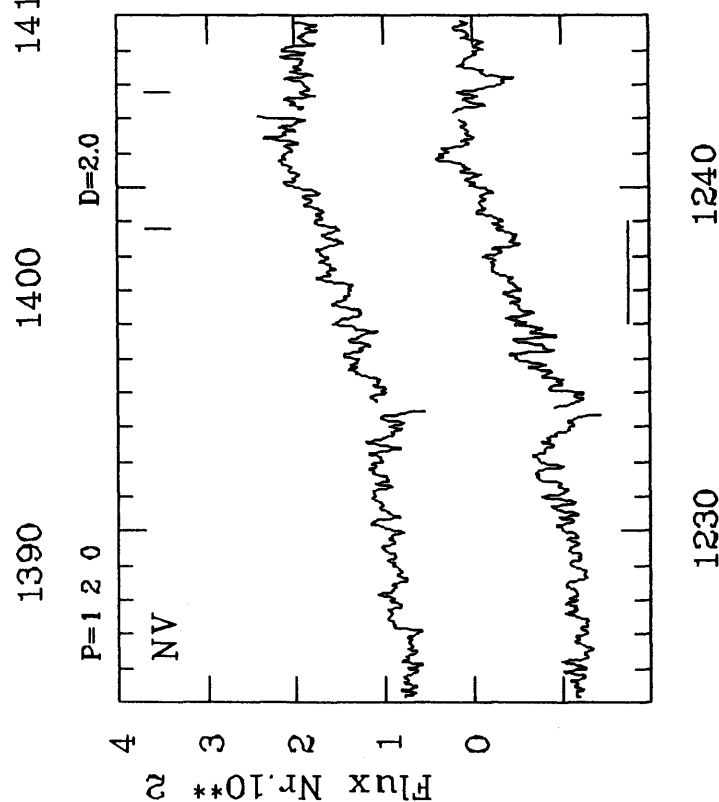
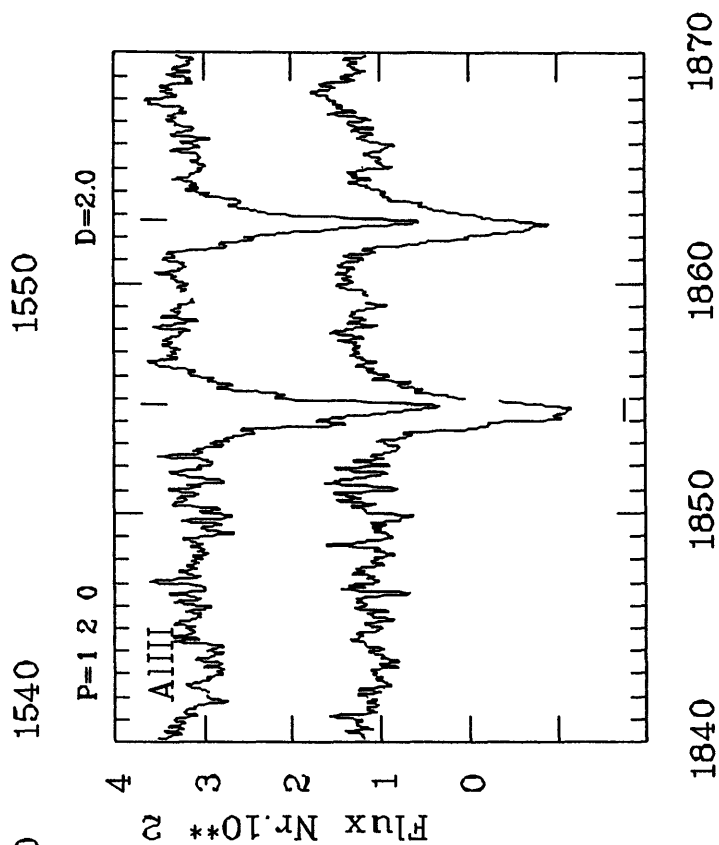
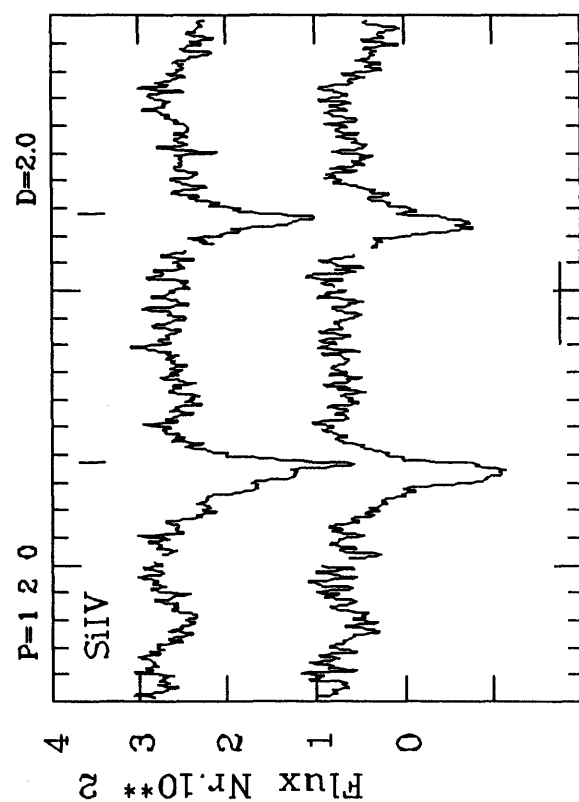
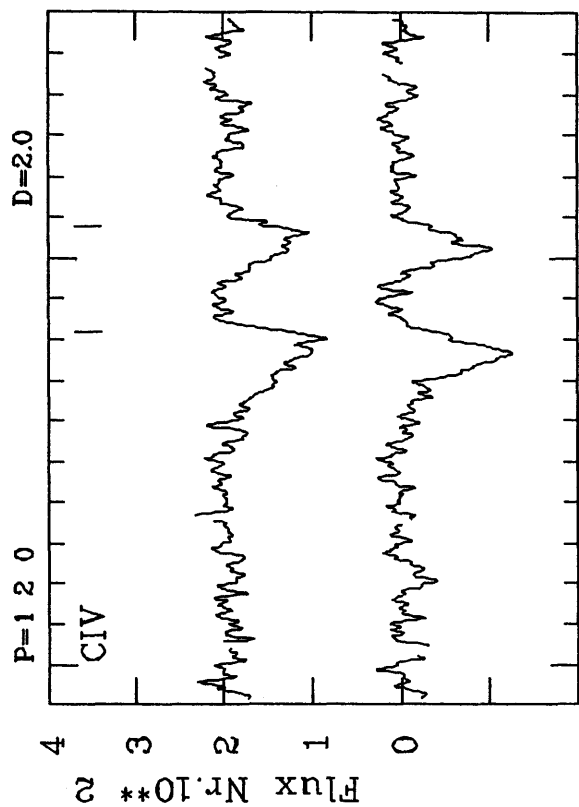
vsini 300



IUE 3 19323 L 83.02.25
 IUE 2 14259 S 82.09.25
 OHP B GB5527 79.01.01

HD 217675 B6IIIe

vsini 260

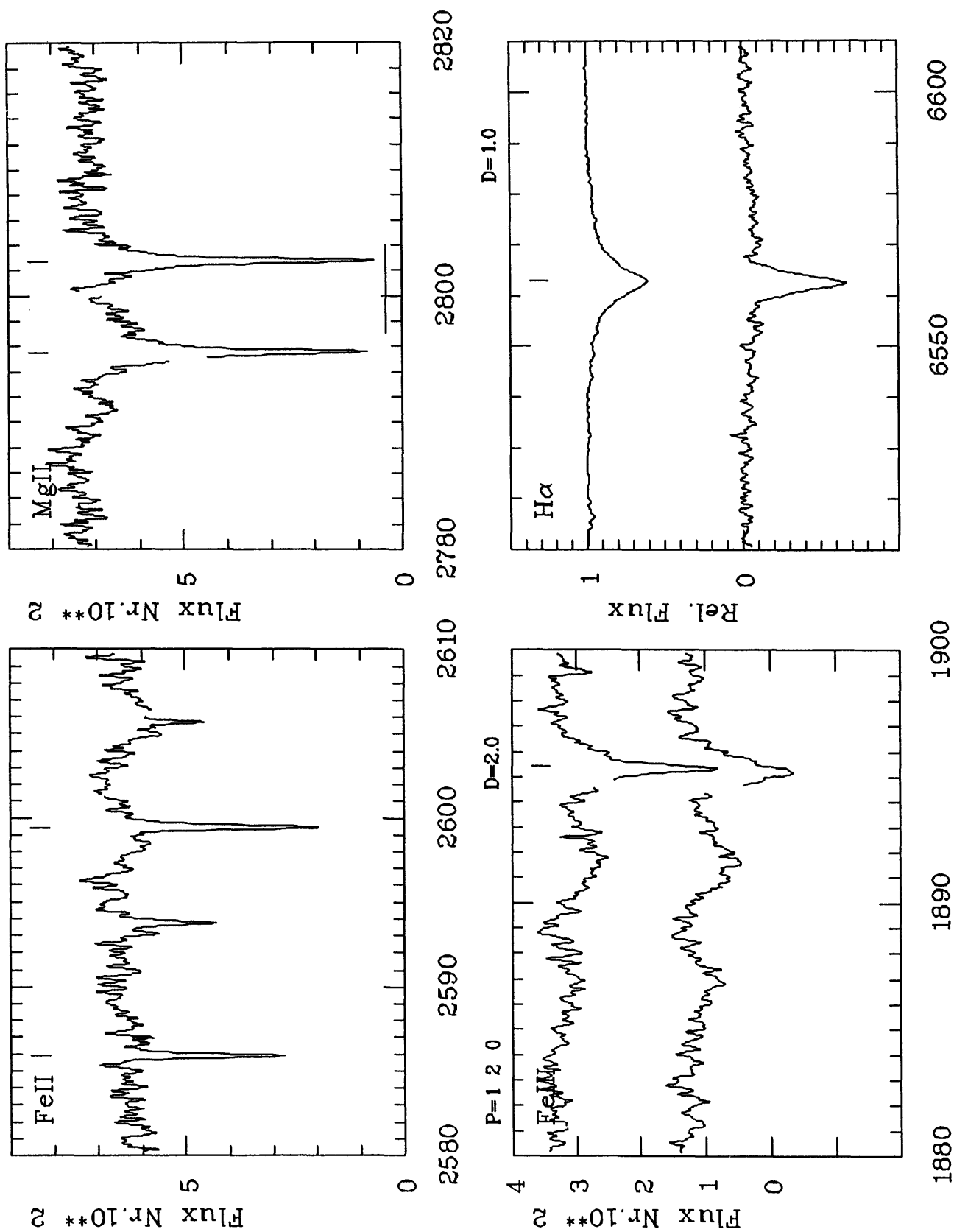


IUE 3 28842 L 86.08.05 - 3 32187 L 87.10.29
 IUE 1 11978 L 87.10.29

OHP R CCD1 87.11.29 - OHP R GA8343 88.11.2

HD 217675 B6IIIe

vsini 260



IUE 3 28842 L 86.08.05 - 3 32187 L 87.10.29

IUE 1 11978 L 87.10.29

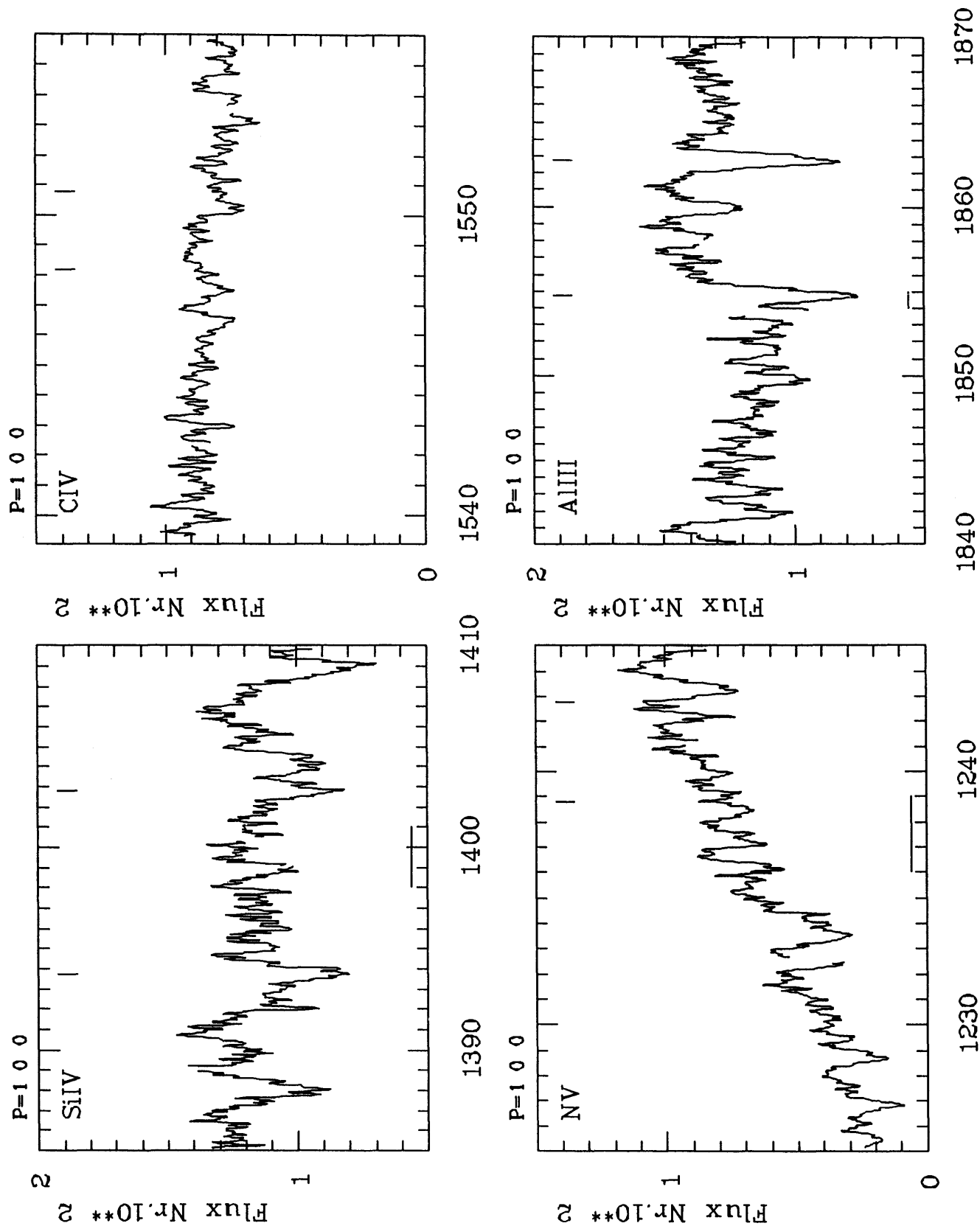
OHP R CCD1

87.11.29 - OHP R GA8343

88.11.2

HD 217891 B5Ve

vsini 100



IUE 3 15512 S 81.11.18

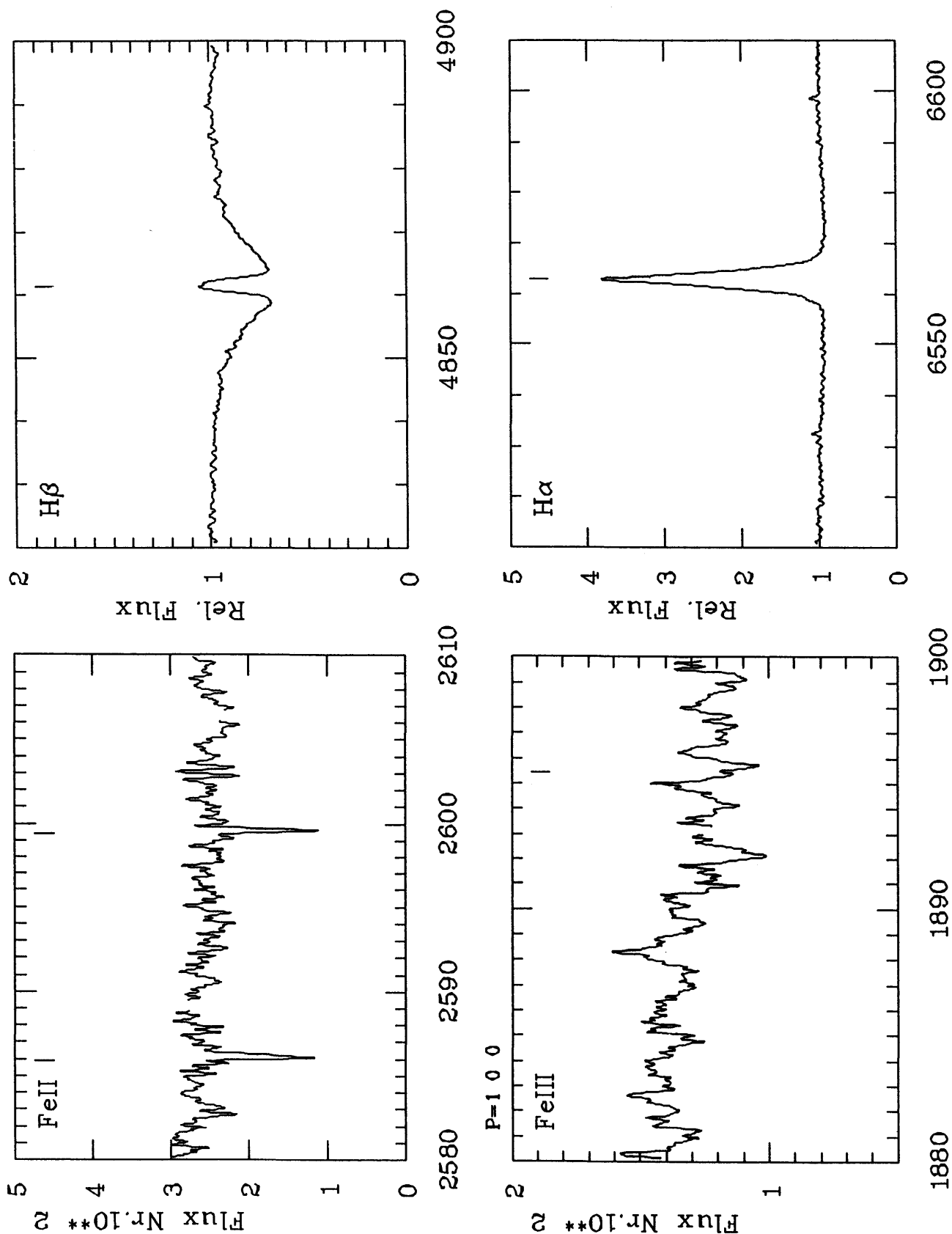
IUE 2 09069 S 80.10.17

ESO B G13829 88.10.25

ESO R G13808 88.10.23

HD 217891 B5Ve

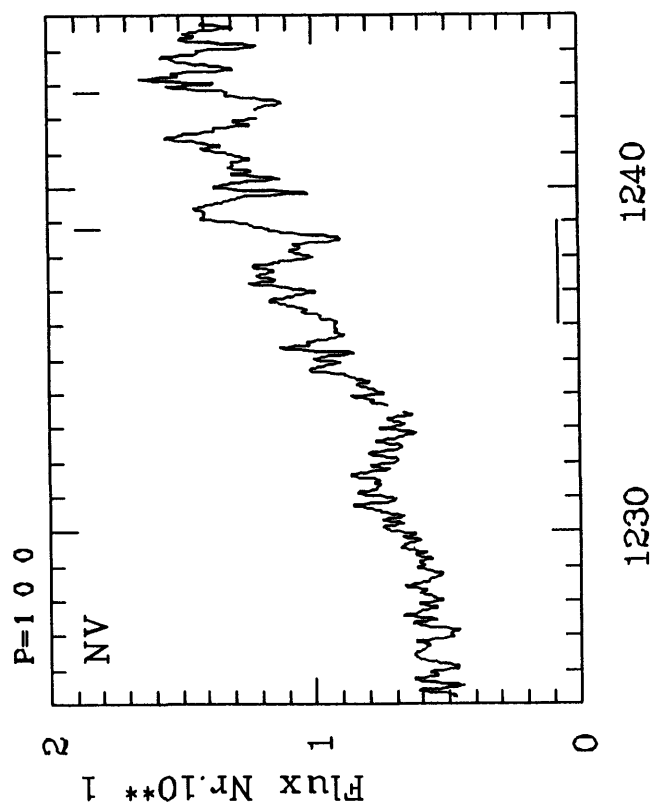
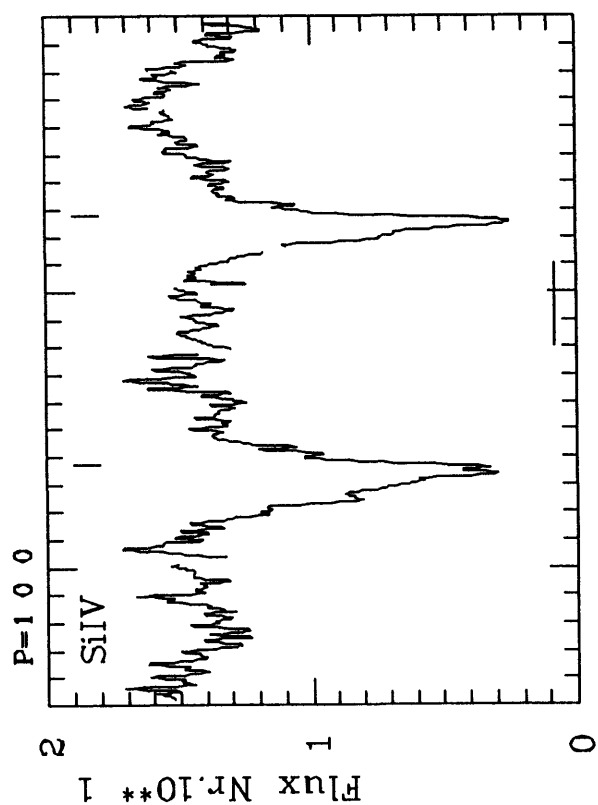
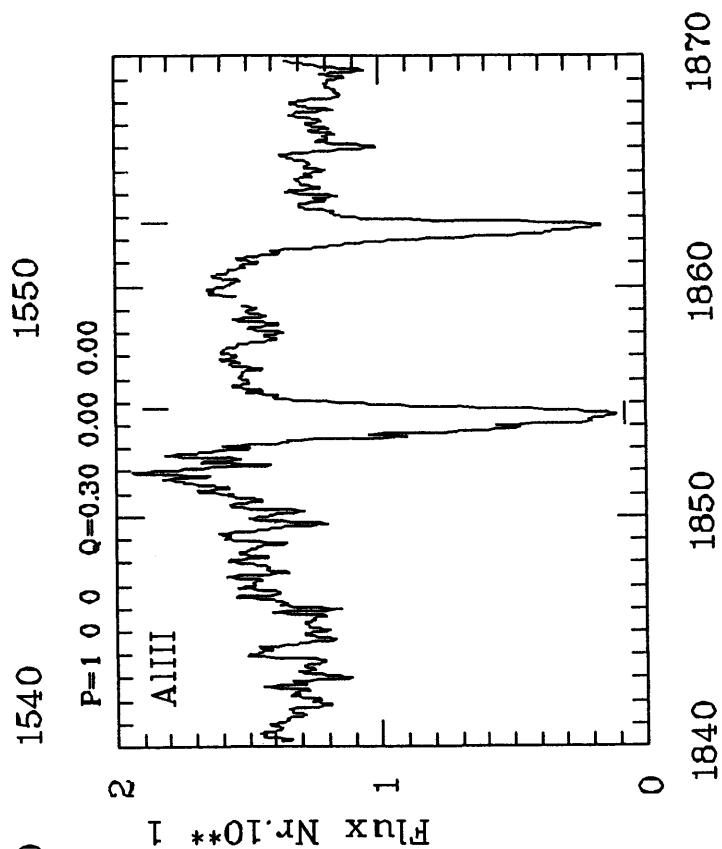
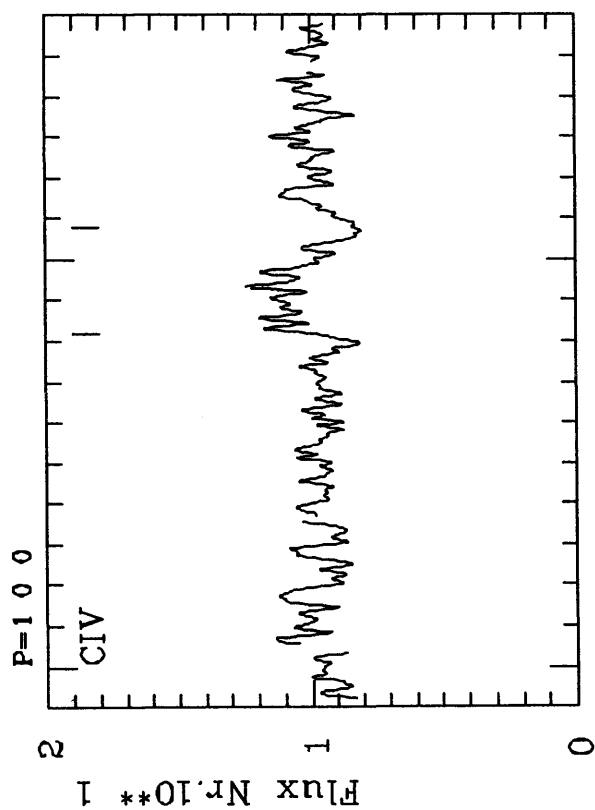
vsini 100



IUE 3 15512 S 81.11.18
 IUE 2 09069 S 80.10.17
 ESO B G13829 88.10.25
 ESO R G13808 88.10.23

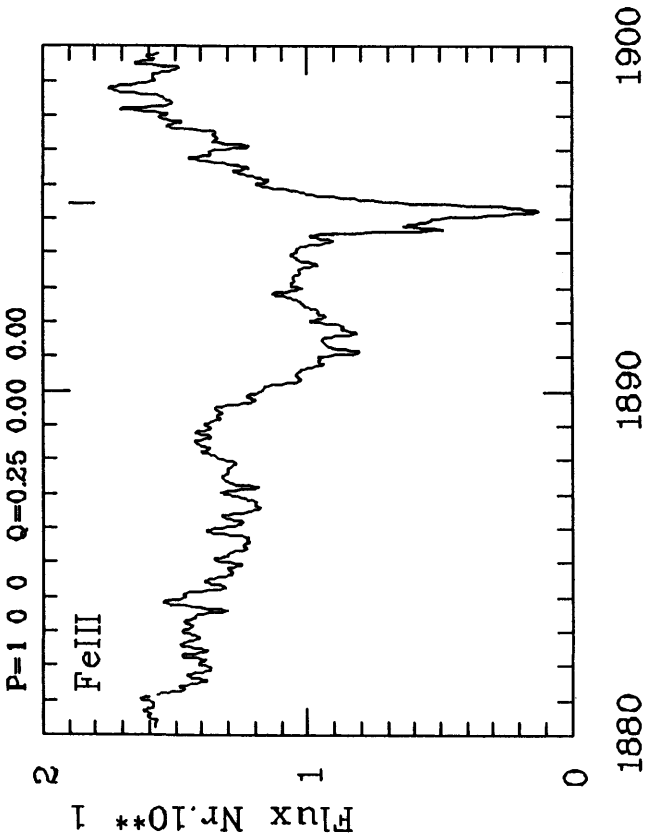
HD 218674 B3IVesh

vsini 255



HD 218674 B3IVesh

vsini 255

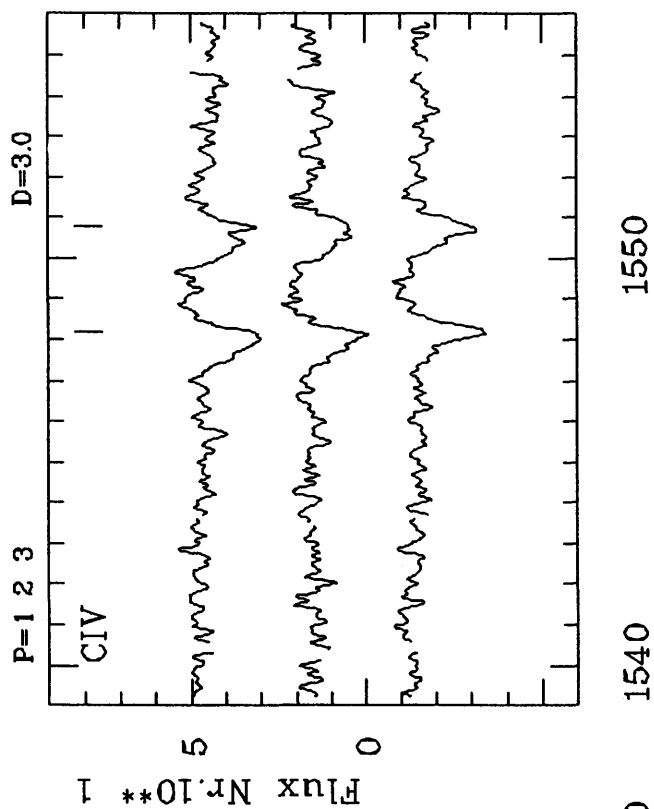


IUE 3 26309 L 85.06.29

-
-
-

HD 224686 B8Ve

vsini 280



1410

1400

1390

1540

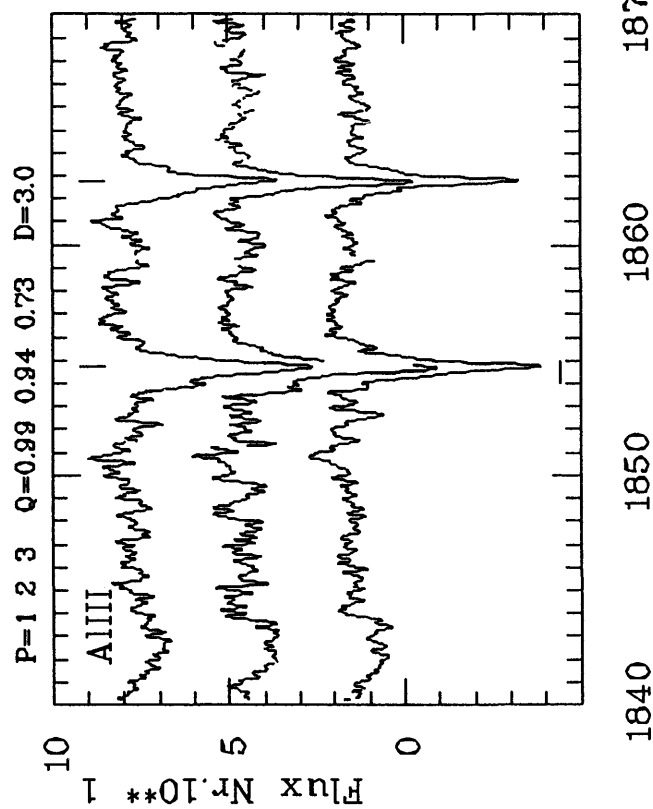
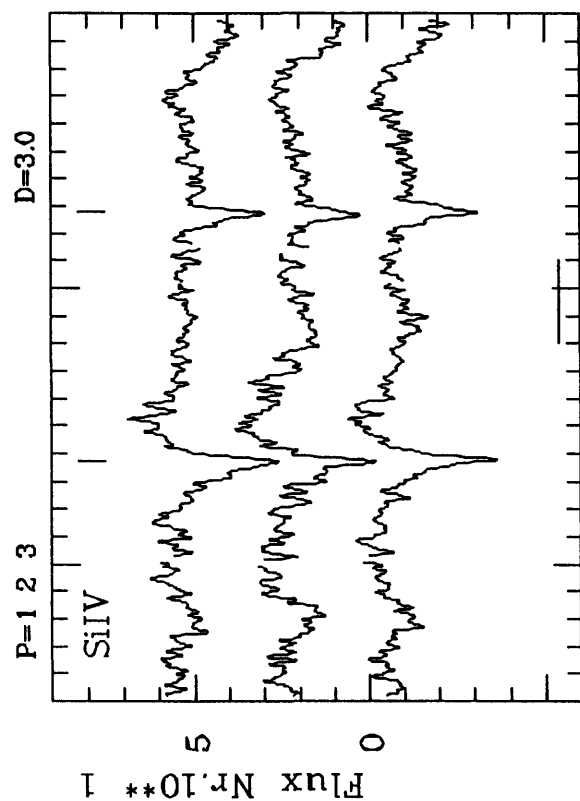
1550

1840

1850

1860

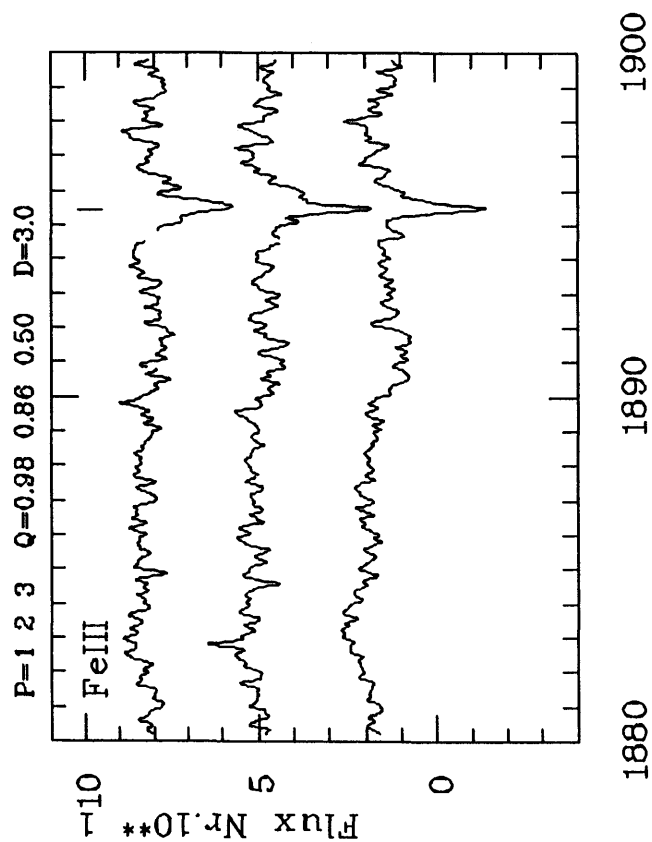
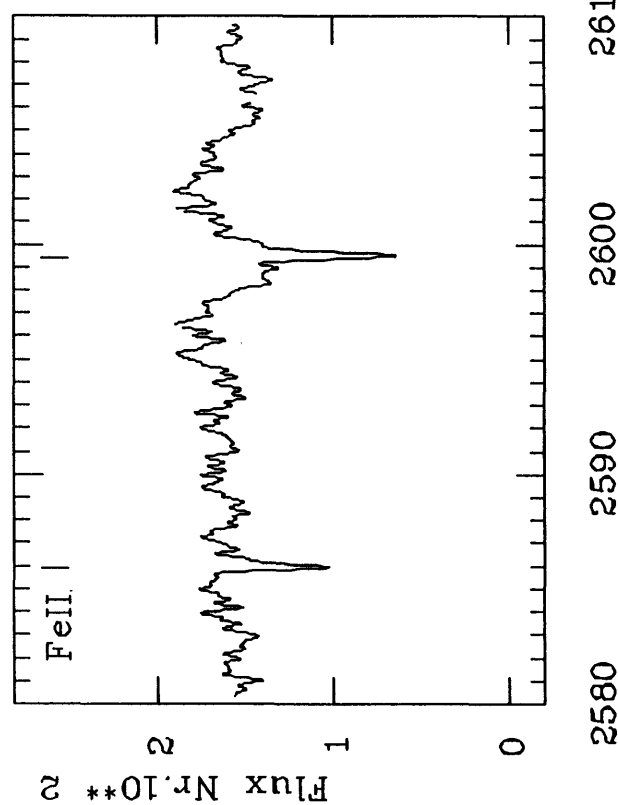
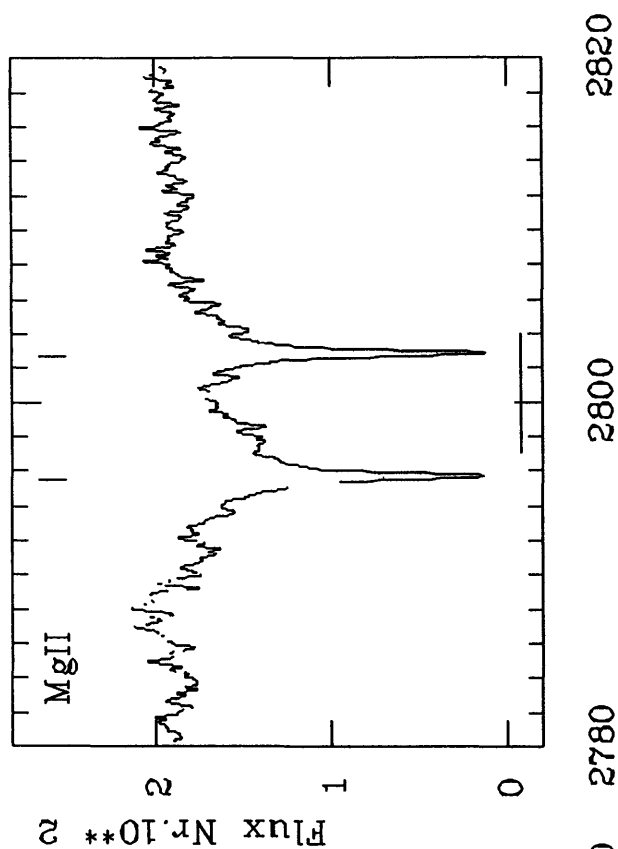
1870



IUE 3 22848 L 84.04.25 - 3 24454 L 84.11.12 - 3 25957 L 85.05.16
 IUE 1 05993 L 85.05.16

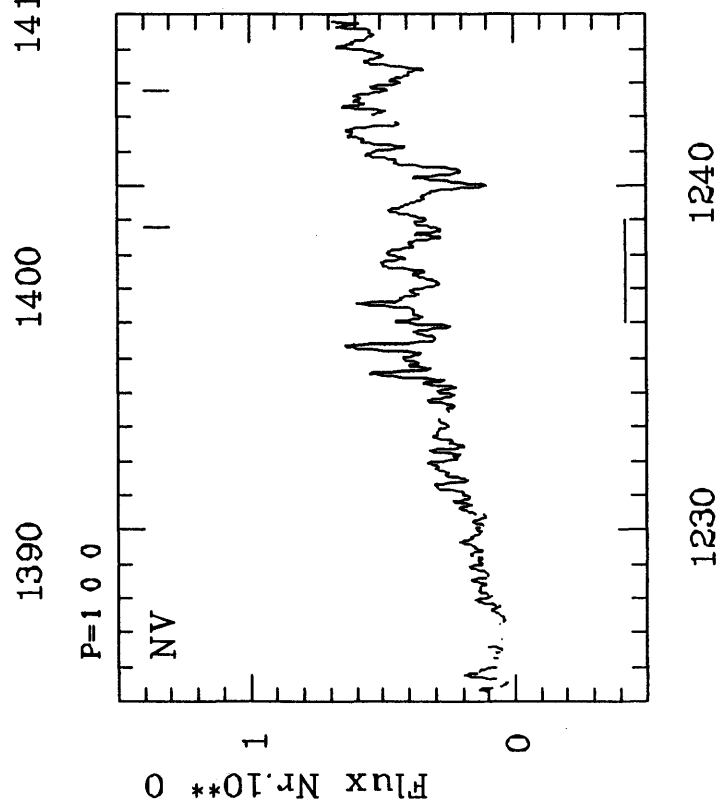
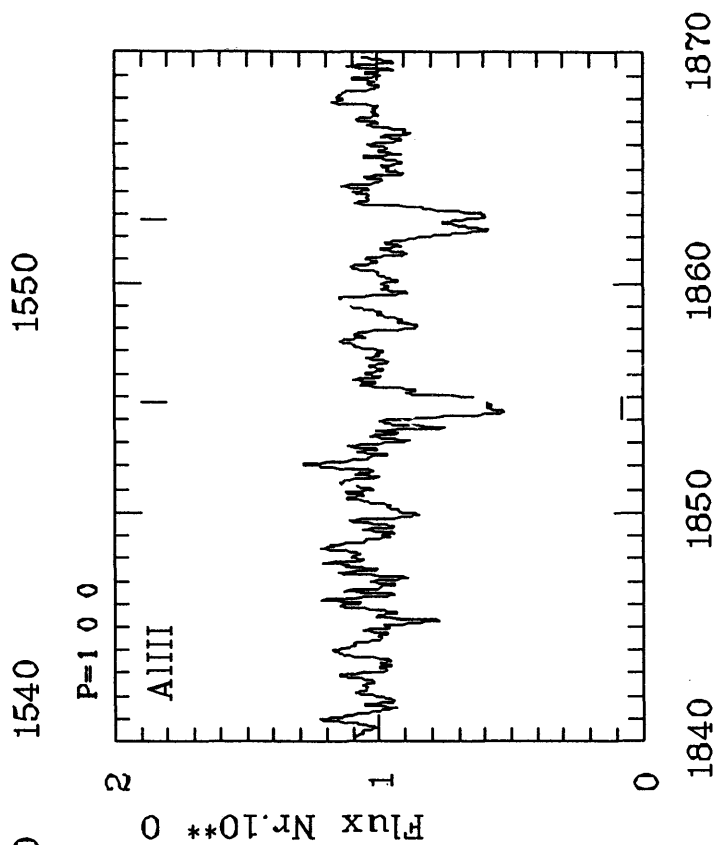
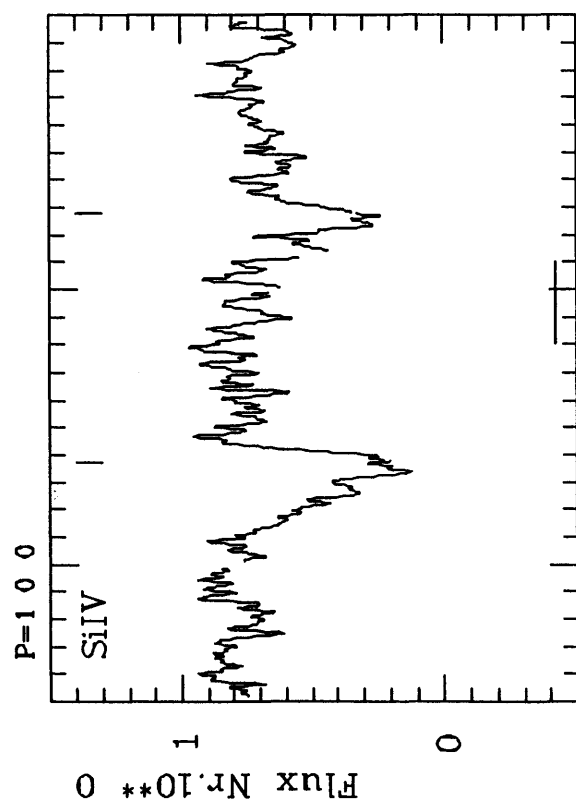
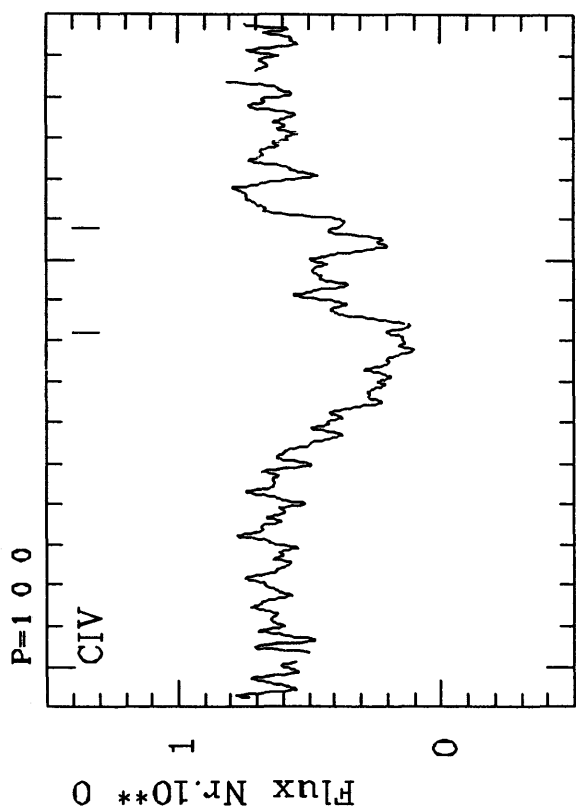
HD 224686 B8Ve

vsini 280



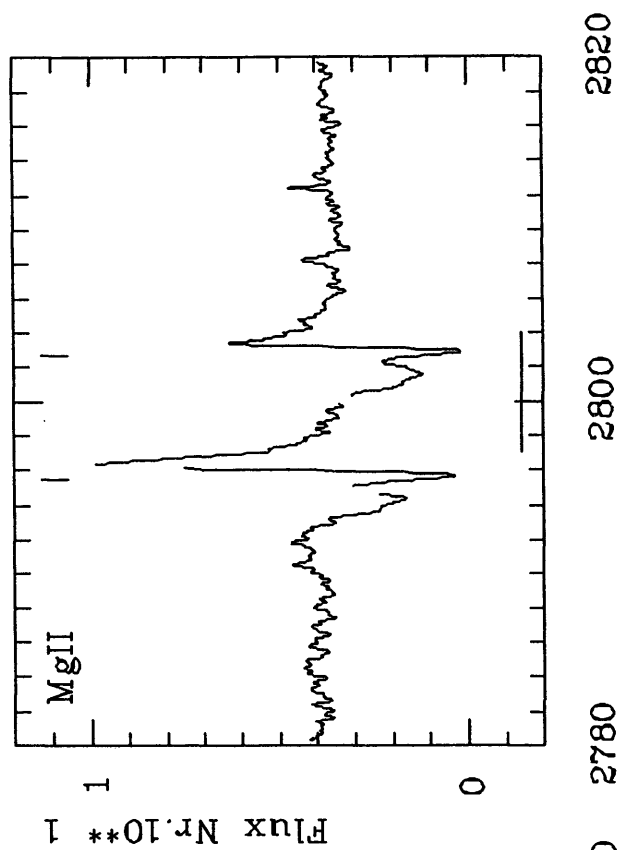
IUE 3 22848 L 84.04.25 - 3 24454 L 84.11.12 - 3 25957 L 85.05.16
 IUE 1 05993 L 85.05.16

HD 259431 B6pe



IUE 3 28132 L 86.04.09
IUE 1 02681 L 84.01.21

HD 259431 B6pe



IUE 3 28132 L 86.04.09
IUE 1 02681 L 84.01.21

